

BUSINESS PLANNING SERVICES

01-903 1414

Unilever Computer Services Limited

NEWS IN BRIEF

'The chips are down'

A CALL for the government to mobilise resources on a scale "not seen since the war" to tackle the likely impact on employment of microprocessors and automation, has been made by Colin Hines of Earth Resources Research in London.

In a paper called "The chips are down," Hines says that there will be an "enormous" unemployment that could flow from increased automation.

Agreement

THE marketing of Control Data optical character reading systems is likely to be taken over soon by OCR specialists, Scan-Data, following the announcement of a preliminary agreement between the two firms. This is also likely to lead to Control Data acquiring one million of Scan-Data's common shares.

Rival from Harris

A COMPETITOR for the Digital Equipment Corporation VAX 11/780 32-bit minicomputer is expected to be announced next month by Harris Computer Systems in the form of a machine with a 48-bit arithmetic processor, the I/O, memory access and DMA channels in the existing Harris Slash minis already handle 48 bits, but the processor has a 24-bit word length.

NEB £34m profit

A PROFIT of £34 million before tax and extraordinary items was made by the National Enterprise Board in its 1977 financial year. A profit contribution of £7.21 million was made by ICL, in which the NEB has a shareholding of nearly 25%.

HPA CORAL 66 (RMCS CORAL 66)

PDP-11s (LSI-11) — under RSX-11M, RSX-11D

RT-11, IAS, DOS — with FLOPPY or DISC SYSTEMS

We hope our potential customers who were sceptical of our claims for our CORAL 66 package have overcome their doubts.

We welcome competition and criticism. The user will decide on the good points — we are happy to try to eliminate any irritations.

If the RSX-11M benchmarks are anything to go by, the HPA CORAL 66 compiler, on a PDP-11/70 with cache memory (980ns) under RSX-11M (version 3) has produced aggregate timings of 48.38 seconds. Of course, users run their own benchmarks — there is far more to our compilers than mere speed and real-time programming.

A compatible compiler is available on Computer Automation's LSI-2 and another soon to be released for the NMA series — cross-compilers also available.

HUGH PUGHMAN ASSOCIATES (COMPILERS) LTD.

Newfoundland House, The Quay, Poole, Dorset BH11 1AA

Tel. Poole (0204) 708100 or 708091. Telex 618263 HPA.

ICL's revolutionary system

A SYSTEM which can outperform the 1900 series, can be adapted to handle efficiently any high level language, and which has a revolutionary design to deal with the "natural" structures of information, has been demonstrated for over four years at ICL's Advanced Research and Development Centre in Stevenage.

This Centre also developed the Distributed Array Processor and Contents Addressable Files Store, which have both recently appeared as publicly available ICL products.

In a talk to the ICL Users' Convention at Eastbourne last week, Gordon Scarrott, head of the Stevenage RADC, said that the new processor system, called the Variable Computer System, offers useful advantages compared to a 1900 system in improvements in execution speed, low operating system overheads and reductions in object code size.

Its main feature, however, was that it moves away from traditional Von Neumann architectures, which have been the base of most machine designs in the past.

For example, the VCS processor is designed to ensure that it is not possible for one program to corrupt another during multi-programming execution. All access to stored information in the VCS is only made with respect to its explicit structure and means are provided to protect the structure from accidental corruption.

Like the Burroughs B1700 system, the capability is also provided for adapting part of the microprogram to run

various high level language programs efficiently. As the VCS provides a revolutionary new view of the processor structure, it is not expected to meet ICL's immediate marketing objective of selling more 2800 systems, unlike the CAFS and DAP projects which are complementary to ICL's existing ranges.

An impressive demonstration of CAFS was given at Eastbourne. Demonstrations were also given of voice interaction systems which are currently under development at Stevenage.

According to Scarrott, a combination of VCS, CAFS and voice-interaction systems could provide a computer which can respond to ad hoc, complex human enquiries fast enough for the user to regard it as a credible conversation partner.

Looking to the future, Scarrott said he believed that the two prime aims of "information engineers" — people concerned with the deployment of available technology to meet the information handling needs of society — will be to keep complexity under control and to provide database systems that are easier to use and more responsive to human requirements.



SCARROTT as a credible conversation partner. Looking to the future, Scarrott said he believed that the two prime aims of "information engineers" — people concerned with the deployment of available technology to meet the information handling needs of society — will be to keep complexity under control and to provide database systems that are easier to use and more responsive to human requirements.

Mid-range '370' from NatSemi

FOLLOWING in the wake of Philips' Tivo Pi V32 micro, National Semiconductor has officially announced an IBM 370-compatible system which has the power of a 370/145, is the size of a System 32, and is built around eight of the powerful 2801 four-bit slice microprocessor chips.

The National Semiconductor System 400 uses the company's own IBM 2801A version of the Advanced Micro Devices 2801 chip, which is claimed to have a cycle time between 30 and 50% faster than other versions.

The System 400 has a formidable 16 Megabytes of main memory, and is claimed to offer throughput approaching that of the 370/145.

The machine has the full 370 instruction set and National Semiconductor is offering it with two IBM operating systems: DOS/VS and VM/370.

The System 400 has a microcomputer bus structure which makes it easy to reconfigure and expand the system. A second 32 bit 2801A processor supports both IBM and low-cost microcomputer peripherals. Multibus main memory is 256K bytes and the US price for system with CPU, two input-output processors, service processor and console, 200 Megabytes on disc and a tape unit is \$165,000 to \$200,000.

National Semiconductor will be selling the system on a OEM basis rather than to end-users. It is one of several companies currently discussing the product.

Two other national companies, Cnblo & Wireless, owned by the government, and International Aerodrome, controlled by the nationalised British Airways, are also involved in the talks, and a joint venture communications export company dubbed Britel could result.

Renewed pressure for a rationalisation of the UK electronics and telecommunications industry came last week following a speech by Ernest Harrison, chairman of Racal.

HYTERM HIGH QUALITY PRINTING TERMINAL

- 45 C.P.S. printing at 1200 baud
- Buffer overflow protection
- Switchable IBM 2741/Teletype compatibility
- Interchangeable type fonts
- Advanced formatting and forms handling
- Precision graphics capability

United Kingdom: PAIR Ltd., 100, The Quadrant, London W1 8JL

Imported to Great Britain by ICL Limited, Sheepen Place, Colchester, Essex, CO1 1NP. Tel. 0206 344444. Telex 914444 ICL G. Fax 0206 344444.

COMPUTER & MANAGEMENT EDUCATION SERVICES (Software) Ltd

75-76 Little Britain, London EC1

Tel. 01-600 0711

OFFICE OF THE MICROPROGRESSIVE SOFTWARE HOUSES

MIND your own business with...

PEC Computers Ltd, 100, The Quadrant, Colchester, Essex, CO1 1NP. Tel. 0206 344444. Telex 914444 ICL G. Fax 0206 344444.

Briefing ICL expands S-range

A NEW entry in the ICL 2900 range, code-named S2 and believed to be a small 2940 model, has been revealed by ICL to some potential users. Other 2900 "S range" systems are likely to include improved versions of other 2800 models, the largest being the 2886.

One feature of the S systems, first introduced with the 2850, is more efficient I/O, communications and memory access structures. For larger systems, such as an improved 2870 model, processor power is boosted by improved instruction interleaving techniques.

Second revolution

THE Department of Industry accepts that information technology could lead to a "second industrial revolution" and believes that the existing government agencies working on the problem will eventually be able to come up with a solution. That was one of major policy viewpoints expressed by leading civil servant Martin Lam last week. For more, see page 5.

802 visitors

COMTEC Europe closed its doors last Thursday on over 80 satisfied stand-holders who welcomed 5,602 visitors. Next year's exhibition from May 8-10 promises to be bigger and better than ever. Meanwhile, the UK show, Comtex 78, which this year takes place at Olympia, is nearly sold out.

E Series forecasts

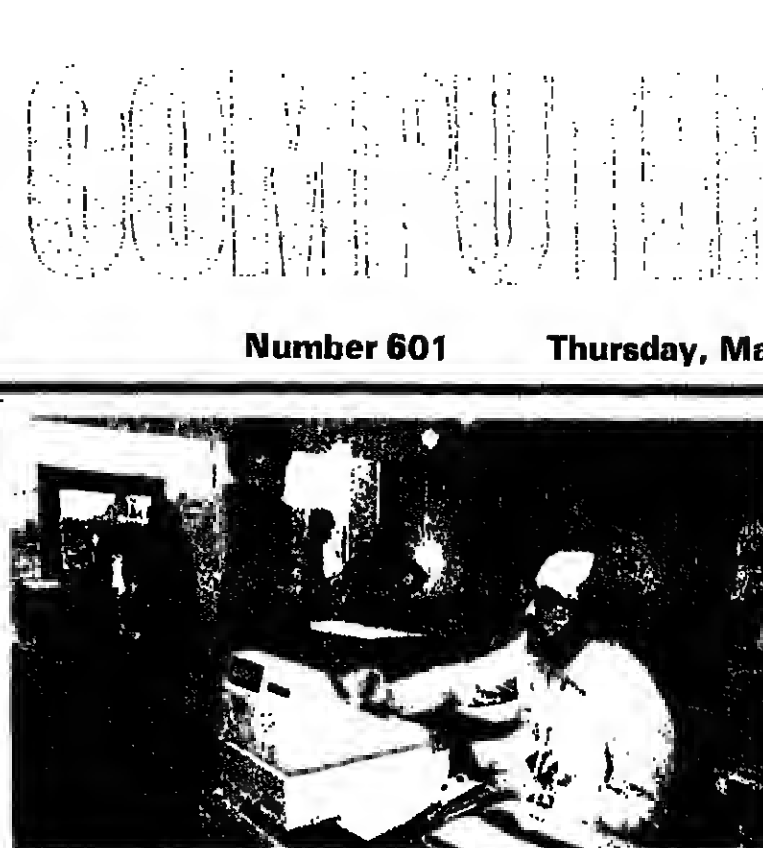
SOME IBM watchers have been predicting that launch of the E-series will be put off until spring 1979, but the leaks in Japan have led to revised forecasts that at least two of the predicted six models will appear later this year. The top machine is expected to offer twice the power of the 148, and the range is thought to be microprocessor based, as are two P's V32 and National Semiconductor's System 400, both of which are 370-compatible (CW, May 8).

Centre-file changes

TOP management changes are expected to be announced by the Centre-file bureau by the end of this week, although no details are available at the time of going to press. Centre-file is a subsidiary of the National Westminster Bank and specialises in accounting services for stockbrokers and building societies.

Faster model

A NEW top-of-the-line 90-series model has been announced by Univac in the US. A cache memory has been added which is claimed to make it 35% faster than the 90/803, and maximum main memory is doubled to 8 Megabytes. The 90/804 costs £1.3 million, compared to \$1 million for a 2 Megabyte 90/803.



Programmers are 'amateurs' using the Devil's inventions

THE majority of today's programmers are "amateurs" using "hard-wired" inventions by Mephistopheles, such as programming loops, but the "craft of programming" will be radically altered by the end of the century, making software programmers as we know them today redundant.

That is a view expressed by computer pioneer Dr Carl Hammer in an interview with Computer Weekly editor Malcolm Pettit in which Dr Hammer looked at the nature and impact of computing in the future (see page 4).

He said that one of the greatest challenges facing DP managers was managing DP staff who, by and large, had "forgotten what work is."

"Nine out of ten programmers today are 'amateurs', many of whom see themselves as geniuses who can ignore ordinary work rules such as time keeping," he said.

It was wrong, he believed, for anyone to have the idea that they are geniuses. They had many years — possibly decades — of insight and experience. Dr Hammer's general thesis was that computer architecture to-date have failed to match the structure of problems. He described languages such as Cobol and Fortran as "examinations without which we cannot live" and said that looping program structures were a "hard-wired invention by Mephistopheles."

In the future, he believed, new parallel and array processing computer architectures will be developed to help man to manage complex social problems. The craft of programming, he believes, will turn into a question of architectural analysis, building a structured design from hardware modules to match the structure of the problem.

The "analytical architect" of the future will resemble an electrical engineer, he said, concerned primarily with selecting the connectivity requirements for a system from a catalogue of firmware components.

By the beginning of the next century, he believed, it was likely that there would be few jobs for the programming function as it is currently understood.

The network will probably make use of the existing Nato integrated communications system, NICS, which handles voice and data communications between all the member countries of Nato.

Over-the-counter bytes

OVER-THE-COUNTER computer sales came to East London on Saturday when The Byte Shop at Ilford opened for business. The shop attracted a steady stream of "micro buffs" throughout the day eager to see some of the hardware about which they had only been able to read.

Sales on the first day were mainly of the wide range of books handled by LP Enterprises, the importing company run by Vince Cohen, a partner in the store. The shop will be selling the Newbear Computing Store 77-88 system and Bearbag range of packaged board kits. A Commodore Pet is also to be added to the inventory. Cohen and his partner, Bill Cannings, plan to

extend their retail operations and are considering franchising additional shops around the country. One planned for Birmingham could be open in a few months.

In addition to hardware, the Byte Shop offers two software packages written by Software Works Inc of America. These are Mailroom, an interactive mailing list package coping with up to 1,000 names and addresses, and Inventory, an inventory control system for up to 940 items. Both are written in Basic and are intended to run on the 8080/280 based system using the North Star minifloppy disc system.

● Vince Cohen is pictured ringing up one of the first sales at the Byte Shop.

Nato to call for network bids

By Keith Jones

MAJOR software companies in Europe and the US are preparing to bid for some of the biggest software contracts ever placed. The customer will be Nato and the main contract will involve a network of command and control systems covering European member countries and linking them with the US.

A call for bids is expected to be made soon for a study contract which alone should be worth about \$8 million. The study will involve specifying the architecture of the command and control network.

Nato is understood to be considering using X25 as the protocol for linking the systems in the network, a move which would greatly increase the pressure on manufacturers to provide full support for the protocol.

The network will probably make use of the existing Nato integrated communications system, NICS, which handles voice and data communications between all the member countries of Nato.

tem, NICS, which handles voice and data communications between all the member countries of Nato.

In addition to the command and control system, contracts are also to be placed soon for two message switching systems, understood to be code named Scars and Comp, although no details are available yet.

UK companies known to be

preparing bids for the Nato contracts include Logica, Scicon and Leasco Software.

Computer Science is also understood to be bidding although the firm is only prepared to say that it is interested in a number of Nato projects, without being specific. It is aiming to capitalise on its experience in the field.

● Turn to page 16

New challenge to IBM

LOW-COST alternatives to the IBM 370/138, 148 and the 3031 have been announced in the US this week by Magnuson Systems, the latest challenger to IBM with "look-alike" processors (CW, November 10, 1977). The Magnuson machines are said to be two to three times less expensive than their IBM equivalents.

The company plans to launch the systems in Europe soon.

'Chocs' away with men's awards at Computastars first heat

A TEAM from Rowntree Mackintosh dominated the men's events in the North East heats of Computastars, held at the Nab Wood Sports Centre in Bingley, Yorkshire, last weekend. They romped away with the team title by scoring 152 points overall with closest rivals, Platt Soco Lowall, the textile machinery manufacturers, second with 133 points.

Martin Rigby, a system designer with Rowntree Mackintosh, took the men's individual title. After spending most of the day performing press-ups, stand-ups, drop-kicking goals and "wells, boots" alighting, he appeared almost as fit as at the start of the competition.

Rigby, who plays rugby union for York, said: "I didn't find it particularly difficult because the rugby season has just finished and I'm pretty fit."

The ladies' team title was taken by the girls from Woolworth, Rochdale. They were comfortable winners with 176 points, while Midland Bank Sheffield, were runners-up, 167 points.

The ladies' individual competition featured a see-saw battle between Kathryn Cochrane (Woolworth) and Shelle Watson (Midland Bank) who finished the stronger, eventually winning by 84 points to 55. Shelle, extremely modest in victory, said: "I think it was a matter of luck and nerves, really. Funny enough, I did better in the things I didn't expect to be doing — in the back recing, for example."

Computastars is a nationwide competition for DP personnel organised by John Goldsmith Computer Services and supported by Computer Weekly.

● The next Computastars heat takes place this Sunday, May 21, at the Whitchurch Sports Centre, Bristol. This will be followed by heats in South and North London, Liverpool and Birmingham.

INSIDE THIS WEEK

THE squeeze is still on, but there is plenty to interest everybody in this Computer Weekly. At Eurocomp there was talk of revolution and the trail that mirrors are blazing into the 21st Century (Page 11). From Brussels, The Palmer reports on Computer Europe, the specialist show which is putting in more exhibitors and more visitors each year (Page 18). And all the regular features continue to give full coverage to the scene. Software File reports on Burroughs' efforts to soothe users of the scrapped MCP VI (page 7); On Spot deals with the need for good documentation (Page 13); and Micro News looks at ITT's move into personal computers (Page 14). Gerry Fisher hits out at the government's policy for computers (Page 8), and there is growing controversy in Japan over the use of computers in school administration (Page 15). There is also Giff's hydrophobic (Page 8), People (Page 10), Downside (Page 10), and Letters (Page 12). The new adventures of the Hex Kid have been delayed because of the space problem but he is due back next week.

IRISH JOBS PAGES 17-18. APPOINTMENTS 17-47.

Distributed Computing Centralised Intelligence

Distributed systems are no longer a concept for tomorrow. For several of Data Logic's clients they are fast becoming a reality. For one leading company we are implementing a network of over twenty minicomputers. For another, a system with ten processors. A third will have four interconnected minis each supporting twelve or more remote terminals.

Each of these solutions was tailored to meet a specific need. Processor power, local storage, communications links and central facilities were all designed with care for optimum usability at minimum cost.

The clients supplied the crucial knowledge of their business environments. Data Logic supplied the technical skills. Jointly, we provided the ingredients that create system solutions that last.

Data Logic Limited, Westway House, 320 Ruslip Road East, Uxbridge, Middlesex, UB8 3AT. Tel. 01-875 9111.

DATA LOGIC
the total capability computer company

When a man of the stature of Dr. David Hammer criticises the majority of professional programmers and analysts as being "amateurs" (see front page) it is time to sit up and take note.

Like all generalisations, the validity of Dr. Hammer's statement must be judged at its macro philosophical level rather than by bit picking at the details.

In saying that nine out of ten programmers are amateurs, Dr. Hammer was not offering a researched statistical figure or suggesting that the DP profession is filled with people who are consciously being charlatans or layabouts.

But he was pointing out that the rapid growth of computing usage has created a huge demand for staff to perform what at first sight seem to be demanding, intellectually complex tasks.

Although this is true for a

Programmers and analysts Hammered

minority of systems design and implementation functions. It is not really true for the bulk of the work carried out by today's DP staff.

Often the work is more analogous to traditional routine clerical functions than to the popular image of the mathematical genius grappling with intricate matters of systems and programming logic design.

Within the computer "profession," particularly in the UK with its continuing class and educational divisions, there is even a feeling that software people are in some way superior

to the people who bear the brunt of systems implementation, the operations staff.

This is reflected in the ridiculous state of affairs where operations staff, who can make or break the effective running of a system, are generally paid less than programming staff, who often have very little understanding of the importance of the end product to the user.

The way in which computers have become an intrinsic part of the fabric of society, coupled with the general failure of software people to design and implement reliable, useable systems

to tight deadlines, has meant that at a time of general unemployment, there is an insatiable demand for programmers and analysts to sort out past bugs and develop new systems.

In many organisations, young programmers doing relatively undemanding tasks are being paid no more than men and women with a lifetime's experience. Even if a computer system might sometimes threaten other people's employment, DP staff can sleep comfortably, secure in the knowledge that there will be acres of job vacancies in the computer Press each week.

Dr. Hammer's words should be a sharp reminder, particularly to analysts and programmers, that their highly privileged position in society should result in a professional attitude to the creation of systems and a responsible concern for the impact the technology will have on society as a whole.

French attack on telecoms authorities

A MAJOR attack has been made on telecommunications authorities by Louis Pouzin, research director of the Institut de Recherche d'Informatique et d'Automatique, near Paris.

Speaking at Eurocomp 78 last week, Pouzin said that he had consistently ignored the findings of research network and the standards produced by International Standards Organisation.

He said that ITT packet network lacked any system architecture and just piled up interfaces one on top of another. The CCITT interfaces such as X25 had been badly designed and could be used only with additional overhead and some limitations.

He went on to say that X21 had been announced as the universal synchronous data interface for Public Data Networks, but it had not enabled a network to be built.

Similarly X25 was defined for switched virtual circuits carrying packets. But it needed an estimated 4,000 instructions to implement and required the addition of a further interface, the packet assembler/disassembler, to handle asynchronous terminals.

As so far defined, PAD only worked with 145 code, at 110 or 300 bps, and this was in conflict with CCITT recommendation XI.

Pouzin foresees that still further interfaces will be needed to handle demand for accessing simpler terminals, equipment only connected to exchange lines, and more sophisticated devices incorporating page control, password control, code translation and message handling.

It is not proven that technology loses jobs," he said. "It creates jobs as well as destroying them."

There was increasing public concern, he added, that society would reach 1984 before time and the issues must be dealt with unemotionally, in public.

More on the impact of computers, pages 8, 11 and 48.

IBM on liberty debate

THE managing director of the UK, Eddie Nixon, has added his voice to the debate on the effect of computers on liberty and employment. In a talk to the CSA "The social impact of computing," Nixon said that IBM would be ready to help in the investigation of these weighty issues.

In asserting that the debate hitherto has been largely emotional, Nixon emphasised that the relationship perceived between technology and unemployment was only partly due to the technology itself. It also stemmed from failure in marketing. In that new trade produced new jobs, and from the restructuring of society from being industrial to being based on services.

"It is not proven that technology loses jobs," he said. "It creates jobs as well as destroying them."

There was increasing public concern, he added, that society would reach 1984 before time and the issues must be dealt with unemotionally, in public.

More on the impact of computers, pages 8, 11 and 48.

All is revealed at hush-hush traffic centre

By Chris Youett

SHHH... there's a "hush hush" computer centre being built somewhere in the Midlands that will control traffic signals on Britain's 2,000 miles of motorway.

Any budding James Bond can find its location from the public records of Warwickshire County Council, which gave the building planning permission.

But reports last week indicated that a security clampdown on its location had been ordered by government officials because of fears of vandalism and possible terrorist attacks.

It is understood that a lot of money is being spent on security devices.

When this was put to the Department of the Environment in London, a spokesman said: "Oh, really, I wasn't aware of that."



Building work started quietly in Colehill Heath Road, Colehill, near Birmingham, last year, and the £150,000 shell is nearly complete.

It is understood that inside the shell is another building—rather like a Chinese puzzle.

Originally, it was to have been one of a number of regional computer centres with the capacity to control the

whole network and the site, by the side of the M6 motorway, was picked "because it was more convenient," said the spokesman.

It should be operational after 1980 and police will input weather and crash data. The computer will automatically flash up a series of warning signs along the affected stretch of motorway.

Sporting Life shies at first fence

A LACK of adequate training for operators and the complex nature of the newspaper, rather than faults in the computer system, have been blamed for the recent problems encountered by Sporting Life, following its move over to computer typesetting/print technology.

Due to this, Sporting Life, which is one of Mirror Group Newspapers, lost six issues last week and had to return to hot metal production at the beginning of this week to resume publication.

The computer hardware involved is based on Prime 100 minicomputers linked to Linotype Paul phototypesetting equipment.

"The complex nature of Sporting Life, which has a lot of detailed editorial information like race programmes, was an important reason for the problems," said a spokesman for the National Graphical Association, which has the majority of computer typesetting operators among its members at MGN. "It is really a question of further personal training, which I believe is being undertaken."

A MORE powerful version of Chess Challenger, the computerised chessboard, has been introduced by Spectrum Marketing. Known as the master version, it offers three levels of play: for beginners, average and better players, and, in addition, allows the player to select offence or defence—white or black pieces.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

It is believed that Sporting Life will now be the last MGN paper to go over to the new technology. Instead of the second, and its place will be taken by the Sunday People, Sunday Mirror, or Daily Mirror.

Two-month countdown for Fortran 77 standard

THE American National Standards Institute, having finished work in April on the new Fortran standard, popularly known as Fortran 77, will be making available copies of the standard in about two months, following the final editing of the text.

The technical specification is likely to be similar to that proposed by ANSI's X3.13 committee last June, including amendments made in October. Both these documents have already been published.

Although the formal designation of the standard will be X3.9-1978, ANSI has apparently agreed to accept continued use of the informal title Fortran 77, which once because so much of the work was done last year.

As with the 1966 standard, ANSI has defined two levels of the language: Fortran, replacing

X3.9-1966 (Fortran), and Subset Fortran, replacing X3.10-1966 (Basic Fortran).

A number of subset implementations have already been produced in anticipation of the standard being adopted. These include compilers from CDC, ICL, Intel and Waterloo University.

Intel's implementation, said to be the first from any minicomputer or microcomputer vendor, executes on Intel 8080 and 8085 microprocessors as well as on the company's Intellect Series 11/220 and 11/230 CPUs. Confusingly called Fortran 80, the compiler is said to meet and exceed the ANSI 77 subset specification.

Fortran 77 both introduces a number of new features to the language and tightens up the definition of existing facilities. One of the most significant

extensions is the introduction of a character data type. As well as replacing the existing provision for Hollerith string constants, the new feature supports character variables, arrays, and functions.

Another new feature is the inclusion of IF, ELSE IF, ELSE, and ENDIF statements, providing an important program structuring tool.

A large part of the extension has concentrated on enhancing the I/O facilities of Fortran. The language now includes OPEN, CLOSE, and INQUIRE statements for file processing, supporting both direct access and sequential files.

Direct access files will require an explicit OPEN statement whereas for sequential files an implicit OPEN will be generated on the first reference if the statement is omitted. Thus

existing Fortran programs processing sequential files will continue to work.

Other extensions include facilities for list-directed I/O, similar to those in Basic, and modifications in the processing of arrays and the DO loop.

Tory MP probes state of computer assisted learning

CROYDON Central Tory MP, John Moore, is investigating the current state of examination and experiment in the use of computerised teaching machines in schools.

Disatisfied with the government's answers to questions he tabled in the Commons, he has now put down a further series to Mrs Shirley Williams, Secretary of State for Education.

He wants to know what funds are involved in the Schools Council project for the development of teaching materials used in computer experiments, and in how many schools these are being pursued.

Moore had been told that the Council for Educational Technology was being allocated additional funds to promote computer-assisted learning,

Brussels Mandate to meet in London

THE inhibiting effect of telecommunications legislation on the growth of international networks will be one of the main talking points at the first meeting of the Brussels Mandate in London on June 15 and 16.

So called because the concept was formulated after the 1962 conference on transnational data flow in Brussels earlier this year, the Brussels Mandate is the brainchild of American lawyer John Eger, who worked for the AT&T telecommunications giant for 15 years before becoming telecommunications adviser to the Nixon/Ford Administration in Washington.

Eger said that he saw the Brussels Mandate as a world club for communications policy concerned essentially with freedom of communications and the laws that discouraged this.

Eger told Computer Weekly that he hoped the London meeting would attract representatives from government, the academic world and from telecommunications users in roughly equal numbers. But international network users like the Chase Manhattan Bank and American Express had already decided to attend.

Moves to link up travel agents

although no sum was specified. It is to be used to assist in disseminating information and materials developed during the five-year National Development Programme which ended last year.

He has also questioned a claim by Mrs Williams, in the final report on that programme, that the UK had established itself as one of the world leaders in computer-assisted learning.

He wants her to back this claim up by indicating the numbers of computers in place in the UK as compared in the US and Scandinavia in the educational system.

He also wants to know what are the total funds allocated so far to assist in disseminating information and materials developed during the programme.

COMPUTER WEEKLY

Vol. 24 No. 801

Thursday, May 18, 1978

Editor Malcolm Paltu 01-261 8033

Copy Editor Tony Higgins 01-261 8998

Advertising Manager Henry Hudson 01-261 8359

Class Ad Manager Brian Durrant 01-261 8025

IPC Electrical Electronic Press Ltd, Donat House, 8, Stamford Street, London, SE1 1DL

Telephone: 01-261 8000

Telex: 28127 RIBPGB G

Branch Offices:

Birmingham: 202 Lynton House, Watfall Road, Birmingham B78 1JH

London: 81 Finsbury Avenue, London EC2A 3DF

Manchester: 100-102, Market Street, Manchester M1 1PL

New York: 205 East 42nd Street, New York NY 10017

Telephone: (212) 867 2080

Telex: 421211

Published weekly on Thursdays

Registered at the Post Office as a newspaper. Price per copy 15p

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (overseas) plus postage

10p (over

SOFTWARE FILE-1

Dol moves on Status II marketing co-ordination

AN INITIATIVE has been taken by the Department of Industry to co-ordinate the further development and exploitation of Status II, the information retrieval package developed by the farwell laboratory of the United Kingdom Atomic Energy Authority.

The Department, which previously contributed funds for the development of the package, has set up a Status Club. Members will have franchise rights to the system in different market sectors. It is also to carry out an initial survey of the potential market.

Intended to be self-financing out of licence receipts, the club will be administered by the Horwell laboratory. Initial members include ICL, Datskil, Systems Designers Ltd, GEC, Ferranti,

BOC Datasolve, and CTL.

According to a Dol spokesman, the Department felt that there is a need for a strong UK package in this area. It decided to standardise on Status because of its applicability to a wider range of machines than other systems, notably the Bird system originally developed at Queen's University, Belfast.

Aspects of Bird had however been incorporated into recent versions of Status, he said.

About a dozen organisations outside the UKAEA already use Status II, on machines ranging from minicomputers to large mainframes. Applications range from the legal and bibliographical fields, to those with requirements for very rapid changes to a database containing both free text and numerical information.

Applications packs for ADDS 50, 70

The first of a series of applications packages for the System 50 and System 70 range of intelligent terminals has been announced by ADDS UK. Produced by Gemini Computer Systems, it is available through ADDS's distributor network, which is still being built up.

Adds is a suite of ten programs dealing with weekly and monthly payroll for £500, Address and nominal ledgers for £1,500, and Addetool will deal with production planning and control.

Both terminals are compatible with the IBM 3740, but the System 70 with its extra Intel 8080 microprocessor and 8K bytes of RAM, can emulate the ICL 7020 enabling it to communicate with ICL mainframes.

Heavyweights join US patents battle

SUPPORT has built up on both sides in the current US Supreme Court case on patenting computer software, Luttrell Parker (Acting) Commissioner of Patents and Trademarks v Dale Flook which centres round software for the automation of an oil refinery.

In addition to Adapco (Software File, May 4), organisations filing amicus curiae briefs in favour of patentability are Applied Data Research, Software Associates Inc, and Mobil Oil Corp.

Filing against is CBEMA — Computer and Business Equipment Manufacturers Association — whose members include IBM, Sperry Rand, NCR and other dominant hardware manufacturers.

The ADR brief opposes the idea put forward by the Patents Office and CBEMA that software is an "idea", a "method of doing business", or a "mathematical algorithm". Instead it argues that software is one means of implementing a machine system.

Software patents, it says, are

patents on special-purpose machine systems that, for technological and economic reasons, are constructed by means of stored programs (ie software) and a general-purpose computer.

The company's argument hinges on the assertion that software and hardware are engineering equivalents, such that any "software machine" (ie program) could alternatively be built in hardware.

Economic factors — namely the cost of designing and producing special integrated circuits — are cited as the major reason for not producing hardware versions.

In addition to minimum volume arguments against implementation in firmware, ADR also points to the greater ease with which enhancements can be made in conventional software.

The brief notes that the Court of Customs and Patent Appeals has in prior cases found that "hardware and software forms of programming are engineering equivalents".

The court has also previously established, says ADR, that "general-purpose hardware is structured by software into a special-purpose computer, and that the structure of this special-purpose machine is determined by the inserted software".

ADR's interest in the question is more than theoretical: the company holds software patents on two of its products and has received a third patent for its Star hardware/software system for telephone monitoring.

One of the software patents, for a method of magnetic tape sorting, has been obtained by developments in technology that the firm, for the company's Autoflow automatic flowcharting

presumably still offers useful protection for the product, one of the most widely sold of proprietary software packages.

The company explains the "with the advent of microcomputers and integrated circuits it is possible to build an Autoflow machine system completely in hardware, based on the principles covered in the patent."

"Each of the functions can be put into one or more chips and the entire machine logic would be the size of today's calculator and would form a 'big box'.... The price of such a machine might be inordinately high however."

Datamanager successes

NORTH American users of MSP's Datamanager data dictionary are holding their fourth national conference this week in Cambridge, Massachusetts.

Datamanager, which has about 100 users in North America, was the high-scoring system out of four additional packages included in the December 1977 USA Data processing report. In addition, MSP's Datapro reports that it was the only data dictionary to perform as advertised immediately.

The conference ends today (Monday).

Coral 'first'

FULL approval has been granted by IEEA, the establishment's Committee on Computers, to the Coral system, the first of its kind in the world. This is the first time a non-resident computer system has been approved, and has 15 users.

SOFTWARE FILE-2

IBM man to give insight into Ironman

ANOTHER opportunity to gain an insight into the Penicillin Ironman project is provided, surprisingly, by the next meeting of the BCS PL/I specialist group.

PL/I was one of the languages originally considered as a basis for the development. One of those who worked on adapting the language to meet the Ironman specification, Bob Maddocks of IBM Harlow, will describe this work to the specialist group.

Maddocks' presentation, entitled "The PL/I approach to the Ironman project," will fall into two parts: a description of the project as a whole, followed by a description of the PL/I modifications and extensions which were proposed.

The meeting, which is open to all, will be held on May 26 in Room 48 of the London School of Economics, Houghton St, London, W1C. Scheduled to start at 8 pm, the meeting will begin with the typically brief AGM of the PL/I specialist group.

Burroughs soothes anger over MCP

A REPORT currently being distributed to Burroughs medium-system sites should go some way to alleviating user anger over the scrapping of MCP VI. Support for DMS II is now scheduled to materialise in the first quarter of 1979.

Burroughs' decision to kill MCP VI (Software File, January 12) shocked many users in Europe and in the US. A crucial factor was the implicit cancellation of eagerly-anticipated support for DMS II, Burroughs' highly regarded database management system.

Some users with plans to develop large on-line databases were thereby obliged to consider a costly upgrade to a large Burroughs system, the B8700 and B7700, and their successors, the B8800 and 7800, already support DMS II, as do the small machines, the B1700 and B1800.

In recognition of user anxiety,

Burroughs allowed a four-man investigating team from Europe to visit its US plant in Detroit and Pasadena earlier this year.

According to Tony Bale, chairman of the Association of Burroughs Computer Users in the UK, this team was given every facility by the company and came back substantially reassured over Burroughs' plans for dealing with the problem.

The team, which included two delegates from the UK and two from Holland, has now completed a detailed report on its findings, which is being circulated to medium-system users.

One of the UK delegates, Eric Holloway of Alcan Management Services, said it was now clear that Burroughs had made the right decision in cancelling MCP VI. Although there was no evidence that it failed to meet the functional specification,

performance had been unacceptably poor.

He added that a serious commitment was now evident to redeveloping the operating system. The first fruits of this effort would be a level O release of the re-worked MCP VI.

This would be followed in the third quarter by release VI.1, which would support DMS I, an enhanced version of Forte II. Support for DMS II was projected for the first quarter of 1979, with release VI.2.

SPEL from Dacoli

A PROGRAMMING language has been developed by Scottish systems house Dacoli to increase the facilities available to users of the DL 180 VDU data entry system. The language, SPEL, enables the equipment to be used for stand-alone processing as well as data entry.

Offer of free development time

FOLLOWING the establishment of a UK subsidiary earlier this year (CW, January 19) Basic Timesharing is offering, to qualified UK software houses, free development time on a BTI 4000 system installed at its offices in Slough.

To be eligible, software houses must have experience in Basic and must have an in-depth knowledge of a potential applications area.

The first firm to take up the offer is Hunter Software, which is developing a system for handling hotel reservations and associated commercial accounting. Both companies believe that there is a strong demand for an inexpensive system in this area.

The package, being written in Basic Timesharing's Basic X, will initially be aimed at BTI 4000 users. However, Hunter anticipates adapting the software to run on other systems. "Good software sells systems," said Basic Timesharing's UK marketing manager Mike Payne, in explanation of the scheme. The company, which built its first packaged system in 1971, has about 750 systems installed or on order worldwide, 12 of these being in the UK.

Boole Babbage first in marketing moves

THE latest company to be formed expressly to market software products starts off with two Boole and Babbage products for IBM OS users. The company, The European Software Co, holds European licences for Resolve, an online operations monitor (CW, November 11, 1976), and Secure, a new data access and system integrity package.

Boeing makes own packs available in UK

SOFTWARE developed by Boeing for its own scalar management has been made available on the Mainstream-CTS time sharing service run by Boeing Computer Centres. Executive Information Service is a set of planning and analytical tools for direct use by

managers and business analysts. The system provides linked interactive facilities for financial applications, modelling, what-if and sensitivity analysis, forecasting and statistics, report writing, graphics, and data management.

The EIS command language

allows users to store and manipulate time series and other data directly without being concerned about the size of the data. A particular feature of the system is a powerful graphics capability which includes the production of histograms, pie charts and 3D graphs.

GILB'S MYTHODOLOGY

Reliable fast input is not dependent on hardware

TRYING to justify a switch to a small online system, in place of batch work carried out by a bureau, a client of mine claimed "online data entry will reduce the high level of input errors".

This myth has been so well sold, that it would not surprise me if many readers believe it to some degree. I suppose I accepted the concept at one time too.

The turning point in my own thinking was when I designed

and installed an order entry/invoicing system which could take its data either online or offline (interactive or batch) modes. This gave me an opportunity to see the differences between the modes of operation.

There is the danger that when a weakly designed batch system is converted to a well-designed interactive input system we falsely credit "online" with improvements which, in fact, are not dependent on the

concept of interactivity.

The invoicing system, with both possibilities, showed there was no difference in the rate of input errors which slipped past programmed checks. In both batch and interactive cases the error rate, as measured by customer complaints and correction due to wrong input, was extremely low.

The major difference we observed was that the interactive entry work took about three hours for a morning post batch, while the batch work took a little over one half hour, plus five minutes for corrections to the first batch run.

Not really strange when you consider that in the interactive system the machine spent a lot of time waiting for the human to key and think and interpret handwriting, while the human spent time waiting for (low priority) response time.

Certain "instant" demands on the system were handled by getting the products immediately from the warehouse, without waiting even for an online system, and the "same day" service objectives were easily met by the batch system.

There was no other difference in the two modes of operation, so the online mode was dropped entirely, and the system happily operated in batch mode for the next years. I don't doubt for a moment that many feeders have experienced improvements when making the transition from batch to online data entry.

My objective is not here to say that "online is wrong" — it isn't. It has its place, and current economic favour it highly.

What I am afraid of is our under-utilisation of the potential we have in an interactive system, because we mistakenly believe that online is the solution for errors and rapid service.



The solutions are several and should normally be applied as a well designed set of techniques. I will give a short list of some of these solutions, so that you get the flavour, but for detailed technology I must refer the reader to our book "Humanised Input" (Gilb and Weinberg, Winthrop/Prenice-Hall, 1977).

Error control techniques that are independent of online batch mode: 1. state clear, quantitative and practically measurable goals for human productivity and error-free, at the beginning of your project; 2. don't be afraid to let a certain amount of input redundancy get into the input; 3. make the input codes as natural and simple as possible for the user; 4. make far better use of file data to check and correct input data; 5. provide for adaptive learning, by experience, in your system, such as self-adjusting product quantity limit-checks or quantity pattern-check codes; 6. do not make your system reliant on human ability to detect and correct errors; put all your effort into automated error control and take human abilities as a bonus; 7. pick up natural data as directly as possible. Avoid filling out forms and finding computer codes; and, 8. those who are currently filling out your forms should be doing the keying. Those who are currently keying should be upgraded or eliminated from your input process.

GILB'S HYPOTHESIS: Reliable and fast data collection is a technology which is largely independent of the hardware you make use of.

Puzzler

THE seven-a-side soccer finals at International Computers finished up as follows:

	P	W	D	L	F	A
Analysts Athletic	3	2	0	1	0	1
Designers United	3	2	1	0	3	2
Hardware Wanderers	3	0	2	1	0	1
Software Rovers	3	0	1	2	1	4

What was the score in the Analysts-Designers match?

See page 45 for solution.

"...let us quote you for the low-cost DECwriter Paper Tape and Cassette ASR plus Extel Contract Maintenance Service"

Ring 01-739 2041 Telex 27595

Extel

The People Who Maintain the Products They Sell

(R) Extel is the Registered Trade Mark of The Exchange Telegraph Company Limited, 75-76 Abchurch Lane, London, E.C. 4A.

PROGRAMMER NOTES

Generated code and macro pre-processors

HIGH-LEVEL language programmers are frequently not concerned with the vagaries of the code finally generated. However, when macro pre-processors are used to provide "structured programming" constructs in an assembler, the pre-processor output is likely to be the programmer's working document.

How closely should the generated code reflect the original structure?

Ken Programmer Notes readers will recognise Figure 1 (below) as having appeared in the column for April 20. It shows a piece of structured program logic and the generated assembler code from a macro pre-processor and the standard Digital Equipment PDP-11 two-pass assembler.

Charles Sharp from the Neuropsychology Research Unit at University College Hospital Medical School used macros from Waterloo University, Ontario to produce the example. Brian Gilbert, a director of Octave Computer Projects of Farnborough, Hampshire was surprised at the generated code. How, he wondered, was it possible for the end-of-loop condition to be tested at the start of the section, in TST EOPSW, when the original UNTIL macro was used at the end of the section? Also worrying Gilbert were the branches BACK to label L3.

Taken on their own his queries may seem pedantic, but the underlying thought is, will programmers use macros if the generated code has such magic

quantities about it?

The original macros served to show the structure of the logic, but the generated code has no immediate flow. Programmers may feel less enthusiastic about the use of macros if the generated code is difficult to follow.

Charles Sharp notes that the LOOP, IF, ELSE, END and UNTIL macros use internal variables for labels and block counters. An IF macro increments the counters and the END macro decrements them. In this way, it can keep track of the levels within a loop.

Also the DEC PDP-11 Assembler is sufficiently powerful to allow macros to invoke other macros and thereby can switch code from one position to another during assembly, as in the example.

But the original Programmer Notes also pointed out that while macro pre-processors improve assembly languages over the manufacturer's offerings, a more logical approach to mnemonics can also help.

Gilbert says DEC users should not complain; they have yet to encounter Data General assembler and mnemonics. Gilbert can easily scan through DEC code and understand it, but he finds Data General code virtually impossible.

"I can see the historic basis behind the code. An engineer could virtually draw the circuit diagram of logic gates from a sample. But it's hardly a programmer's tool."

Figure 1

```

LOOP
  IF A, GE
  ADD A, TPSS
  INC NPOS
  ELSE
  ADD A, TNEG
  INC NNEG
  END
  UNTIL EOPSW, ON,
  loop until eof found

Translated becomes the following code:
L3: TST EOPSW
BNL L2
BML L2
ADD A, TPSS
INC NPOS
BR L3
L2: ADD A, TNEG
INC NNEG
BR L3
L1: CONTINUE
  
```

Datasolve

We were today's biggest British IBM bureau until we became tomorrow's biggest British IBM bureau.

There's a stranger working with our dual IBM 370/158 computers.

An Amdahl V5, Britain's first. One of the most powerful computers ever installed by a bureau.

The name's unusual but the action's familiar. Because Datasolve's Amdahl V5 is totally IBM-compatible. It's more than doubled our capacity overnight. It brings you reliability of a new order.

It puts new power behind our range of on-line services such as Remote Job Entry, APL and TSO. Powerful and versatile enough today to give you the control and facts you'll need to manage your business tomorrow.

Above all the new Amdahl V5 ensures that the service you've grown to expect from Datasolve in the past, you can expect, with interest, in the future.

The IBM Service from Datasolve — growing ahead

BOC

Datasolve

BOC Datasolve Limited
99 Staines Road West,
Sunbury-on-Thames, Middlesex
Telephone: (75) 89566

Just like 1-10

TREND

Printer 800 ASR

- * Hard copy
- * Paper Tape Reader
- * Paper Tape Punch
- * 5 or 8 unit code
- * Black/red printing
- * Modern, current loop, telegraph or parallel interface
- * Optional pedestal

For quote and further details, phone: (0494) 40171 or telex 837455. Trend Communications Limited, Edric House, Castle Street, High Wycombe, Bucks HP13 8RG.

LYME
The New British
manufacturer of low cost
(£845 one of Enri User)
high quality
VDU Terminals
TEL: 01-452 0490

Contact
Stuart Moore

marketplace

For
Advertising Rates
PHONE 01-261 8757

LYME
for details
01-452 0490

Promodata

IBM 3032 Available April 1979. Lease rates on request.
IBM 3031 Available April 1979. Lease rates on request.
IBM 3277/138 Available September 1978. Selling price £200,000.
IBM 3277/2 VDU's 88 Ch. Available immediately. Selling price £2350.00 each.

For further details call **PROMODATA**
on 061-439 6931 or 01-499 7507

General Freight

COURIERS TO THE COMPUTER INDUSTRY
Urgent Documents? Small Spares?
Courier accompanied delivery to or collection from: Europe,
Middle East, USA and Canada.

For Rates and Details Contact:

ALAN RUSSELL, GENERAL FREIGHT CO. LTD.
Telephone: 01-353 7474, Ext. 2670. Telex: 919433

WE BUY SCRAP COMPUTER LISTINGS AND PUNCH CARDS

Best prices paid
Collections or delivery to
**LEYTON WASTE PAPER
CO. LTD.**
Rowin Works, Lynn Road
Leytonstone E.11
01-568 2131
Contact: **MIKE BOWLES**

DATAFIL

Instant files of any block
any record size any field
format with any field
contents on many
frames and minis.
**MAKES THOROUGH PROOF
TESTING EASIER AND QUICKER**
Phone: Write for Spec of User Guide
Datafil Systems Ltd. 20114
The Manor, 1 to 54, Langley Rd
Hemel Hempstead, Herts. AL1 1LS

ELECTRONIC BROKERS LTD

MINI COMPUTERS & PERIPHERALS DEC PDP11/04

Ex-stock delivery of PDP11/04-80 Processors
with 8K MOS memory and 0.11111 Serial
Interface/Line clock. Brand new condition.
Only £2800.
NEW DEC A-D-ON CORE AT BARGAIN PRICES
Last stock of DEC PDP11/04-80 and PDP11/04-15
MIPS-UP 16K memory core complete with backplane
MIPS-UP 16K memory core complete with backplane
COMPUTER FLOORING: Large stocks of top-quality computer flooring, complete
with jacks. The dimensions 2' x 2' x 1/4". Bargain Prices.
DEC PDP11/04-80 Processors
from £2,300

WE SELL WE BUY

TERMINALS

TEXAS SILENT 700 TERMINAL MODEL 728KER, 110/300 baud, complete
with integral acoustic coupler and carrying case. £695
DO YOU WANT A TELETYPE AND A QUIET ENVIRONMENT? NEW
STOCKS OF THE EVER-POPULAR ABBEY TELETYPE WITH SPECIAL
ACOUSTIC COVER. MARVELLOUS VALUE AT £875 (FULLY
OVERHAULED WITH 3 MONTHS WARRANTY).
CORPORATE UNIT TWO LOW-COST LARGE-SCREEN BUFFERED VDU
110/2400 baud. Full-featured duplex and batch mode. Full ASCII keyboard plus current
control display. V.24/Current loop interface. Printer port for hard copy attachment.
An attractive modern design. A BRAND NEW SURPLUS (limited quantity only)
ONLY £850 + carriage and VAT.
LOGABOX LX180 PRINTER—AS NEW CONDITION
132 column printer with 88 characters per line (upper and lower case), 180 cps operation,
256 character buffer, continuous paperfeed, V.24 interface. Price £1,280.
NEW ASCII KEYBOARD MODEL K8788
NOW IN STOCK—BRAND NEW 88-STATION ASCII KEYBOARDS
Full 128 characters per line with ROM encoder/decoder and lower case. Control shift,
Fully TTL compatible—power requirements 5v—12v. Supplied with full
technical data, code sheet, pin connections, circuit diagram and applications notes.
FANTASTIC VALUE AT £607. £1,000 A.P. + 8% VAT (mail order total £684.21).
Also available—a range of spares and accessories for the K8788—edge connector,
mounting frame, plastic or steel enclosure, spare ROMs. Send for data sheet/price
list.

ELECTRONIC BROKERS LIMITED
49-53 Pancras Road, London NW1 2QB.
Tel: 01-837 7781 Telex: 288604

WEBSTER D/P SERVICES LTD.

FOR USED DP EQUIPMENT
BUY OR SELL THROUGH

NEW DE LUXE 80 COLUMN
HAND PUNCHES (EX-STOCK)

01-464 9011
WEBSTER D/P SERVICES LTD.
85 WIDMORE ROAD, BROMLEY
KENT BR1 3AA

Co Operators supply first-rate
contract operations staff for
long or short term needs
-FAST-
RING NOW **01.836 8411**

OPERATORS CONTRACT AND PERMANENT

FOR A PROMPT SERVICE
PHONE 01-439 6481 NOW

and speak to a top professional in an
established company
(24-HOUR ANSWERING SERVICE)

EFFECTIA GRAVIS

EFFECTIA GRAVIS
Telephone: 01-439 6481
18 Windsor Street, London W1V 3BE

CONTRACT STAFF
OPERATORS, DATA CONTROL
KEYPUNCH PERSONNEL SUPPLIED
Competitive Rates • Speedy Efficient Service
Tel: 01-248 6367
COMPUVAC

IMMEDIATE DELIVERY OF NEW PDP 11 v 03

Floppy Disc Systems with software packages for
STOCK CONTROL PRODUCTION CONTROL LEDGER
ANALYSIS

Also available:
Low-cost version of these packages supplied with Intel/
Memorex floppy disc system at prices from £6,000
complete.

data-J

Data-J Ltd., 7 Churchhill Court, Rustington, Sussex
Tel: 09062-72902

FOR SALE

I.C. L. Singer 1501 with 8K plus Tape Drive.
I.C. L. Singer 1503 16k, V.D.U.
2 x 5M Disc Drives.
Printer and Communications Adaptors.
TEL: IVAN EZEKIEL
C.J.G. LTD., LONDON, W.2. 01-262 8080

GOVERNMENT COMPUTER REQUIREMENTS

MINISTRY OF AGRICULTURE,
FISHERIES AND FOOD.
A System of Multiplexers linking
1000's of Office lines and systems to
their two IC. 15035 mainframes at
their Colindale installation.
Applications for operational require-
ments quoting CEH/2 to Central
Computer Agency, Room 822,
Beverly House, 15-17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

NEW DEC EQUIPMENT

For immediate delivery
PDP 8A 620 PDP 11-04
We also have several
refurbished Dec computers,
modules and memory. Will
take in part exchange or buy
Dec Processors in any con-
dition.

Telephone:
S.K. SYSTEMS 0462 35267

CODE SERVICES LTD.

We now maintain a large stock of
used KODE Paper Tape Key Punch
units, and a large stock of computer
code requirements.
For further information on our maintenance
service and products please contact us at:
Kode Services Ltd.
Buckley Road
Culver, Wiltshire SN1 1JH
01245 81277
Designed by Total After Sales Service

THE TELEPRINTER SHOP

120 CPM TALLY 1812
24 CPM DECIMETER
24 CPM TELETYPE 43
Less 7% discount by arrangement
DATA TECHNIQUES LTD.
12 Lifford Road, Broomfield, Essex
S.S.11 1JH
Tel: 0206 211111

FOR SALE OR LEASE

370/145
768K
(Model 182)
3215/1, 3047/1
Hugh Benham
Computer Investments
(London) Ltd.
1 Bentinck Street
London W.1 Tel: 486 8811

DATAWASTE LTD.

Still pay the best prices for
scrapped computer paper and
punched cards
01-960 1000

WE SPECIALISE

in converting your existing computer files with
APPROVED CARPET FINISH
Contact Mr. R. A. Darke
Tel. 0782 891437
CENTRAL FLOORING LTD.
Apsdale Road, Chester
Newcastle, Staffs.

COMPUTERS BOUGHT AND SOLD

E.O.S. EQUIPMENT LTD.
1 Rosedale Avenue
Sunderland SR6 8BD
Tel. 0783-283618
Telex 537763

WANG 2200

Desk Top Computer
with
Line printer, twin floppy
discs, flat bed plotter (2
years old).
Contact:
Graeme Ferrero
01-580 5599

WE SUPPLY NEW/REFURBISHED EQUIPMENT IN THE FOLLOWING CATEGORIES:

Buffered Card Punches, Paper Tape Punch/Unpunch
Form Handling, Gullottines, Sorters, Decimators,
Repro. Discs, and all types of Reproduction, Teletype, Ye-
lows, Office Equipment, Tally, Data Processors,
P.O.S. COMMERCIAL DATA SYSTEMS LTD.
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200.

Promodata

LEASING? BUYING? SELLING?

TEL. 01-493 9577 or 061-439 6931

FOR SALE

**145M BYTE NCR CRAM
UNIT AND CONTROLLER**
In working order, the unit and its
documentation.
CHROMATRONICS
RIVERWAY, HARLOW
0278-418811

DUBLIN CORPORATION COMPUTER TERMINAL EQUIPMENT

For sale or lease, the company
specialises in the supply of computer
terminal equipment and associated
software. The company has a large
stock of terminals and associated
equipment, and is able to supply
equipment for a wide range of
applications. The company is also
able to supply equipment for a
wide range of applications.
For further information, please
contact the company at:
Dublin Corporation
10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

DISK PACKS FOR SALE

System 3 5440 2 45 MB 1000
quantity mainly IBM
Offers to: J. G. Plummer
Hornsea 01-988 3168

HAVE YOU A PROBLEM?

IF SO, WE CAN HELP
WE SPECIALISE IN
* Computer/Electronic Installations
* Office Relocations
* Warehousing/Storage
* U.K. Distribution
For details, contact John Fields
W. O. BROADSTREET AND SON LTD.
417 Derby Road, Greenford, Middx.
Tel. 01-878 2266/3308
Telex 284757

TO LET

**KINGFISHER HOUSE, REDDITCH
WORCESTERSHIRE**
**FULLY FITTED COMPUTER SUITE
AND ANCILLARY OFFICES**

Comprising Computer room - 100m² (11m x 9m) and
Engineers Office - 12m² (12m x 10m) both fully air con-
ditioned, with false floor, acoustic ceiling, double glazing,
fire protection system incorporating CO₂ flooding and
smoke sensitive alarm system. Shielded three-phase
electricity supply.

Ancillary Offices 92m² (9.9m x 9.3m) including heating,
lighting and partial carpeting.

Full specification on request to:
Chief Estate Officer
REDDITCH DEVELOPMENT CORPORATION
Plymouth Road, Redditch, Worcs.
Tel. Redditch 54200, Ext. 267

Jobs for people, and people for jobs

And if you're looking for new staff or a new job
permanent or contract - Knight's got you.

Knight
01-491 4706

OPERATORS PROGRAMMERS KEY PUNCH OPERATORS

SUPPORT SERVICES YOU KNOW YOU CAN RELY UPON
KPG Ltd 28 THE BUTTS BRENTFORD MIDDXX 01-568 7345

COMPUTER SAVE COMPUTER SAVE COMPUTER SAVE

is coming...
WATCH THIS SPACE

HEXAGON

computer services
145 WARDOUR STREET, LONDON W1V 3TB

Gemini Contracts EURO UK

contract
opportunities
for experienced
programmers
- Register with an
International Software
Organisation
Telephone 01-828 6634
or evenings 0908, 662745

FOOTIE

computer services limited
CONTRACT or PERMANENT—
ANALYSTS - PROGRAMMERS - OPERATORS
PUNCH OPERATORS - DATA CONTROLLERS
Tel. 01-487 5781 28A Devonshire Street, London, W1.
Telephone 01-487 5781

Contract & Permanent recruitment

Total DP Support at its best
Programming, Operating
Data Preparation Systems
Data Control, Technical Support

Building an exam bank

THIS board offers examinations in data preparation at both elementary and intermediate levels, which basically test the ability to operate key-depression machines for punched cards or paper tape.

At present the board has a small bank of appropriate documents used to compile the intermediate examinations but we would like to add to this, and possibly to build up a similar bank for the elementary examinations.

I would be very grateful to receive any documents which the readers of Computer Weekly think might be suitable. If there are any queries I would be glad to answer them over the telephone on 01-529 2366.

WENDY RILEY
The Royal Society of Arts
Examinations Board,
18 Adam Street,
London,
WC2N 8AJ.

LETTERS

To: The Editor, Computer Weekly,
Dorset House, Stamford Street, London SE1 9LU

Can high technology gain real foothold in UK?

THE BBC Horizon programme dealing with the impact of micro, demanded urgent action by the government or, at the very least, a strategy for the computer industry. There followed some brave words by Tim Wickes "... the UK virtually stands still, almost intently looking in the direction of positive plans for building a sound and strong industry — and most terrifying of all is the ominous silence from our government." (CW, April 13). Later he said that we lack the venture capital to exploit innovation.

I am in the unusual situation of having seen a major British electronics company refuse to exploit what they admitted was an innovation of major potential

NEB must act now on DP investment

I WAS most interested to read your interview with Sir Keith Joseph (CW, April 27). It showed that he has a keen understanding of our industry, but sadly it showed that information technology can easily become a political ball in a game between the Labour and Conservative Parties where both sides and the country lose.

Innovators and small computer company entrepreneurs need venture capital — and with the financial climate as it is today, the National Enterprise Board has a vital role to play in fulfilling this need. We cannot wait for what the Conservatives might do.

I would, however, recommend that the NEB looks more at the concept of multiple small fundings as well as the large type of investment such as it has made with Inspec.

The principle of venture capital is that one in four ventures will be successful. On this basis a investment of £5 million spread over 20 companies can give us at least five new thriving British companies.

There are many other problems for our innovators and entrepreneurs to overcome to be successful in the international markets but venture capital is the fundamental ingredient and its availability is needed now.

Intercon,
London.

TIM WICKES

The Editor welcomes letters on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. All letters are liable to be cut at the discretion of the Editor, unless correspondents state that their letters may not be cut.

Ops must go it alone

IF the attitude expressed by Mr Benson (CW, May 1) is typical of other trade unions with which we operators must align ourselves, then it is patently obvious that we must go it alone — not only for the good of ourselves, but also for the rest of the working class.

With the Luddite fear of technology and the backward thinking of many trade unions, they would like to see British technology held in check while we are hijacking at present, the Japanese and other technological nations force our economy into dire straits.

The problems trade unions should be tackling are those of the distribution of wealth and what life will be like in a technological society.

Unemployment is here to stay because, as technology increases, so too does automation and unemployment. The unions, in fact all of us, should strive to remove the stigma attached to being unemployed.

As the "de-skilling" of jobs progressively continues, we must ensure that our lives become centralised around our pastimes and leisure activities and, not as it is today, around our careers. We must educate people to make better use of their spare time.

Turning to Mr Benson's article, I see he complains about differentials between operators and programmers being eroded. Yet he himself admits to the de-skilling of programmers, operators becoming more technical and increases in shift allowances. It appears to me that Mr Benson, like many computer industry managers, looks upon shift allowances as a perk.

What we operators deserve is a fiveable wage without shift allowances, which should be calculated and shown separately on our wage slips, as is legally required.

Mr Benson, like many others, looks at the operator's gross wage when comparing it with programmers and the like. We operators are used to managing operators in this game. So coming from Mr Benson the attitude is shocking and disturbing.

If he were to remove the shift allowance from our salaries, we would notice how low paid we operators really are.

If operators would like to form their own trade union, I would be only too glad to organise meeting.

P. BRIMBLE
26 Southport Close,
Winchester,
Hampshire.

The British people are deeply conservative, and seem most partial to a return to the pre-industrial, feudal social structure. Spain is our model for behaviour in the immediate post colonial era.

Accidents sometimes happen, and it is possible that high technology will gain a real foothold in Britain, just as it would have been possible for new methods of creating wealth to have been allowed to develop in Spain by the rump which ruled and then lost their empire.

It seems clear that what the British people will permit is cosmetic support for high technology: products and developments can be supported, but support must stop well before there is the possibility of them creating profit and hence a new power base.

What I see, in both private industry and in government, is money being burnt up in the vicinity of major high technology potentials, as a cosmetic to hide the unwillingness to allow a threat to our society's stability. That way, high technology can be glorified, and its atting drawn.

Admittedly our society will not decline, but at least it will decline in an orderly, decorous manner, or so it is hoped.

IVOR CATT
St Albans,
Herts.

Say cheese — provided it's British

WITH reference to your report of the conference on the impact of microprocessors, in which you report quite correctly, that I suggested that we should not be too keen to describe a computer as a 'black box' which remains a mystery to the user, I would like to say that I was only referring to British computers.

BARRY WICKHAM
Director of Research
AETEC,
London.

OP SPOT The importance of documentation

By Bernard Allen

FOR an operations department to be a well-run, co-ordinated unit it is essential that staff are able to find out information about the system and major applications from documentation.

Good documentation ensures continuity when people are either sick or on holiday, and is vital at sites where contract staff are employed.

Since the prime aims of documentation are communication and instruction it is important that it is written clearly and simply, with no chance of any misunderstandings.

At some of the larger installations a technical writer is employed on a full-time basis and one of his duties is the maintenance of operational documentation, but at the smaller sites it is often left, for example, to a shift leader, who has too little time to carry out the function effectively.

What happens when there is a lack of documentation? Let us consider an occurrence at one installation I know of where the matter is given scant attention.

Contrary to installation standards, a programmer used the testing stream to submit a job using a system utility program in order to compress a program library, or file.

Now library compression often takes a considerable time, and the job soon exceeded that allocated to testing stream work at the site.

The console operator had no indication of the nature of the job and, following the installation procedure, tried to contact the programmer to find out if there was a valid reason. Unfortunately the programmer could not be found. Again following the installation procedure, the operator then cancelled the job with the result that the program library was corrupted.

Understandably the programmer was extremely upset because he had to re-create the library, which meant considerable work on his part. The operator was also unhappy for it meant that he and his colleagues would again be blamed unfairly.

How could this situation have been avoided? One of the best methods of documentation, which would have been useful here, is to maintain a run book or manual and to supplement that by submitting each job to the computer room accompanied by a run sheet.

The run manual should contain, for example, a description of each system along with its JCL and restart procedures. Details of input and output requirements should also be included.

From the above example, it is clear that the run sheets submitted along with the job should have some information about the type of program being used and whether or not it can be cancelled.

Other information on the run sheet might include:

- 1) Class of job. (The classes should be clearly defined in the run manual.)
- 2) Estimated run time.
- 3) Telephone number of the programmer concerned.
- 4) Resource requirements of the job — specifying the amount of storage required and the volume serial numbers of any tapes and discs to be used.
- 5) Any other information which the operators and programmers think would aid communication.

At a certain installation a file containing examples of each type of pre-printed stationery used at the site is maintained. It is kept near the printers and its numerical arrangement is in accordance with the numbers issued by the system as a particular type of stationery is required.

The run sheet for a particular job or set of jobs should be submitted to the computer room well before the run is due, so that the operators can make preparations well in advance.

The operators should always be asked for their opinions on the subject, and whoever is responsible for writing the documentation should listen to what they have to say.

Finally bear in mind that common sense should prevail in all matters. If a programmer relates some information about incorrect information, give him the benefit of the doubt and, if it is possible, let the job run to its conclusion. The programmer concerned should also be told about it.

Courses for ops staff

Several one-week courses for operations staff have been planned for this year by Hoskyns Education.

The operations supervision course is intended for operators who are about to move into a supervisory position. Seven more are to be run this year and all will take place in London. The next is on July 3 and the fee is £185, plus VAT.

For shift leaders, an operations planning and control course will include scheduling, the user interface and operations planning. Seven more are planned for this year, and the first will start on June 12 in Bournemouth. The cost is £215, plus VAT, and a fee for accommodation.

The operations management course includes sessions on staff selection, the DP budget, hardware planning and delegation. The next course begins in Bournemouth on July 24 and costs £220, plus VAT and a charge for accommodation.

For further information contact Tony Thorpe, Education Marketing Manager, Hoskyns Education, 81-85 Farringdon Road, London EC1M 3LB. Tel: 01-242 1851.

HINT OF THE WEEK Erasing OS output

ERASING unwanted output in the IBM OS environment is the subject of this week's technical hint.

In the OS system is a pseudo-writer procedure, sometimes called SCRAPIT, which is used to erase the Z class JCL listings produced by the system READERS, WRITERS and MOUNTS.

Now SCRAPIT is the same as any other writer procedure, with one vital difference — no printer device is allocated to it because the dummy parameter is specified in its JCL.

Thus the procedure may be modified to serve any output class like any other writer. This is achieved by the following OS command:

SCRAPIT, CLASS = output class

This is very useful, for example, when a programmer has "handed on" a job and has produced a lot of output which is not needed. Of course, modifying the procedure in this manner should be carried out with extreme care. As soon as it has been done what is required, SCRAPIT should be remodified to cater for output class Z.

Opcomm disco in Coventry

AS mentioned in Op Spot two weeks ago, Opcomm, the Coventry-based operations group, is to hold a large social meeting for operations staff and friends.

Pete Brimble, the group's newly-appointed social secretary has arranged for a discotheque to be held at the Alhambra public house, Silver Street, Coventry on Thursday, May 25, 8.00 pm to midnight.

There is an admission fee of £1 and a buffet will be provided. Tickets may be purchased at the door or obtained from Mike Rees, Flat 1, 1 Broadway Mansions, Broadway, Earlsdon, Coventry, CV5 6NR.

Operators often complain that nobody listens to their point of view. Well, Op Spot is listening and Bernard Allen would like to hear your opinions and ideas on all matters relating to computer operations. Your letters should be sent to Op Spot, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU. Telephone calls are equally welcome and Bernard can be contacted directly on 01-241 8035.

Waiting for the right moment...

THEY say a watched pot never boils — which is probably just as well for this foundry worker at translocation components manufacturer Frank Wigglesworth Ltd is watching the colour of molten metal change as it cools, waiting for the right moment to pour it into a mould.

The wide range of management information being generated by this worker as he carries out his job is now available to the Yorkshire-based company on an Orico General Novo 3 minicomputer which it has installed to handle stock control, order entry, purchase ledger, sales ledger and other management information applications.

The company's plans for future use of the system include the production of numerical control tapes for automatic machine tools.

Amdahl first quarter profits up 78% despite one-third price cuts

FIRST quarter profits at Amdahl were up a formidable 78% on sales up 68% compared with the corresponding period in 1977. Turnover was \$63.75 million and pre-tax profit \$19.13 million.

Amdahl points out that the improvements were achieved despite price cuts of 35%.

The company has changed its accounting policy so that sales are recorded once a machine is handed over to the customer. Formerly sales were only upon customer acceptance, and the new policy meant that six more sales were recorded in the first quarter.

French success

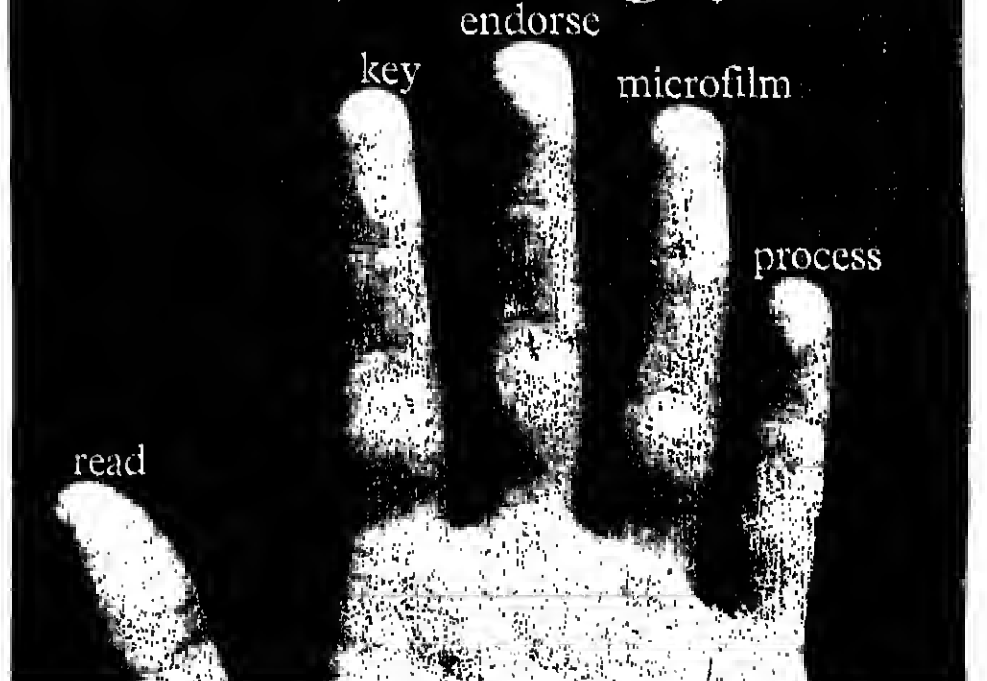
PENETRATION of the French market by ICL has been helped enormously by the success of the 2803 there. Out of 260 systems installed, 65 have gone to first-time users, 138 replaced machines from ICL's competitors and only 57 were ordered by existing ICL users.

A COMPUTER-BASED telex system will aid the running and co-ordination of the World Cup finals to be held in Argentina next month. The system is based on four Eltec minicomputers at centres in Buenos Aires, Rosario, Cordoba and Bahia Blanca, and in all has 48 terminals throughout the country.

The equipment, worth about £2.25 million, was bought from Frederick Electronics Corp of the US, by Entel, the Argentine telecommunications authority.

"Here's what I want in a payment processing system."

endorse
key microfilm
process
read



You've got it, in one!

One stand-alone system to take your source documents and directly capture from them the data you need to put into your computer system. This means you can read pre-printed, imprinted, computer printed, MICR encoded and hand printed characters automatically at high speed and with great accuracy.

One system to allow you to key at the same time that data which cannot be read.

One system - the same system - to endorse and microfilm your original documents as they are read.

One system to provide you with the processing power to prove that the data is correct.

OCR Scan Data Ltd, Queens House, 2 Holly Rd, Twickenham TW1 4EW. Tel: 01-891 0196

Name
Position
Company
Address

Find out more - ScanData have got the one system you need. CW 5

SCANDATA

Scan what you can. Key what you can't.

RECORDS IN RECORD TIME.



Now you can have a permanent copy of your CRT display in seconds with a Polaroid Instant CRT recording system.

There are purpose built systems, like the Polaroid CU-5 camera. Or if you are already using a conventional camera you can probably adapt it to take instant pictures by using one of our range of film backs.

Either way, you'll get instant, high definition photographs for study comparison, pass along information, reproduction or filing.

How the Polaroid System Works

The Polaroid CU-5 hard copy camera, for example, takes a range of hoods to fit virtually any CRT screen size.

You simply hold the camera with the correct hood, flush against the screen. This stops glare and sets the CU-5 camera the precise distance away from the screen. There's no manual focusing.

Just cover the shutter and the display is recorded with pinpoint accuracy on your terminal. Once exposure's been set for a particular CRT screen, it need never be altered.

The Range of Polaroid Instant Film Records

Altogether there are 13 different Polaroid instant films covering all kinds of applications in colour and black and white. And with a range of speeds to cope with a wide range of light intensities.

The Applications

Polaroid instant records can be produced from many types of screens, including computer terminals, closed circuit TV and oscilloscopes.

For more information on Polaroid instant CRT recording systems, or to arrange a demonstration, ring Ray Taylor on Freephone 2143.

POLAROID

CRT IMAGE RECORDING IN SECONDS

MICRO NEWS

ITT enters the 'personal' market

ITT Consumer Products Division confirmed last week that it is to enter the personal computer field, selling Apple II machines (CW, April 27).

The announcement was made at a press conference to introduce the company's activities in a wide variety of TV-based applications areas, including videotext, teletext and video cassette recorders.

To be known as the ITT Computer, the equipment is scheduled to appear in the UK in the autumn, and a minimum configuration machine, 4K bytes of RAM, is expected to sell at about £900.

ITT demonstrated the system working with a speech recognition board from Heuristics. This will be available as one of a range of optional extras and memory configurations. The Heuristics board specially de-

veloped to fit the Apple machine, is already available from Personal Computers in this country for £165 and offers a 32-word speech recognition capability.

In the long term, one of the most interesting parts of the agreement between ITT and Apple is not the actual sale of Apple IIs by the giant multinational — though it is not insignificant that such a large company should feel the need to have a presence in the market. It is that the two companies are talking seriously of a technology licence agreement that would give ITT the right either to buy unpackaged board systems, or even build systems from the board level up, and then package them itself.

One of the prime reasons that ITT has decided to enter the personal computer field is the fact that in the US, the 1978

market for such systems is expected to top 100,000 units, and that all the pointers show that Europe will inevitably follow suit.

The company's market intelligence indicates that around 5,000 systems, with a total value of around £4 million, will be sold in the UK this year. By 1982 however, it expects to see some 225,000 systems sold.

It sees four main market segments making up this sales growth. The biggest sector it sees is the home user, purchasing a system for such applications as entertainment, household accounting, home teaching, etc. It sees this as a separate category from the hobbyist.

The other two sectors are in education, and the professional and small business user.

SOS micro from RCA

ONE of the first generally available microprocessors manufactured in silicon on sapphire process has been made available by RCA Solid State.

Known as the CDP 1804, it is a direct upgrade of the CMOS-processed CDP 1802 device using the same instruction set, but offering the advantages of operating speed inherent in the SOS technology.

While capable of working in 4 to 10 volt power supply range, the device will operate at 6MHz clock frequency of a steady 5 volts. This gives an instruction time of 2 microsecond.

Three options on internal memory configurations are available. These are: 1K byte of ROM and 32 bytes of RAM, 2K bytes of ROM and 64 bytes of RAM, while the third has no ROM and 128 bytes of RAM.

First deliveries of the part are expected by the year end, and RCA is already working with customers on memory configuration and ROM mask layouts. One of the early US customers is expected to be Chrysler, which wants the part for its 1980-model cars.

Edited by Martin Banks

Intel gives more details of the 8086

PRIOR to its June Fair, Intel has released more information about its new 8086, 16-bit microprocessor, which is expected to be one of the highlights of the event. The details come from the company's house journal, Intel News.

As indicated previously (CW, November 24, 1977), the 8086 is software compatible with the 8080 and 8085 devices when a software translation package is used. It provides all the features of the 8080 plus 16-bit arithmetic, interruptible byte string operations and improved bit manipulation.

It also includes such microcomputer features as register code, position independent code and dynamically relocatable programs.

Using the HMOS process technology, the device has been packed into a chip 225 mils square, and contains the equivalent of 29,000 transistors.

Internal clock rates are 5MHz on standard chips and 8MHz on selected chips, which means that programs will generally be executed between seven and 12 times faster than on the 8080. The enhanced instruction set also means that programs will generally be between 10 and 25% shorter.

The instruction set will address operands in several different ways. In general, operands in memory may be ad-

ressed either directly, with the 16-bit offset address or indirectly, with base and/or index registers added to an optional 8 or 16-bit displacement constant.

It will offer several variations of the four basic arithmetic operations. Both 8 and 16-bit arithmetic operations and both signed and unsigned arithmetic are provided, with standard 2's complement representation being used to distinguish signed values.

For handling program flow, two basic varieties of call, jumps and returns are provided — one that transfers control within the current code segment and one that transfers control to an arbitrary code segment, which then becomes the current code segment.

The device has a bus interface unit, which maintains a 8-byte fetch-ahead instruction queue. The execution unit extracts bytes from the queue, and executes them fast enough to eliminate dead time between instruction fetches. As many as two single-byte instructions can be executed within the time for one memory cycle in a fully overlapped fashion.

Since the execution unit functions in parallel with the bus interface unit's activities, it is largely unaffected by direct memory access operations, which also occur on the system bus.

High speed addition to Pace family from NS

A HIGH-SPEED addition has been made by National Semiconductor to its Pace family of 16-bit microprocessors that sports an interrupt structure addressing modes and logical capabilities normally associated with minicomputers.

Said to be between 10 and 30% faster than present generation 8-bit micros such as the 8080, the device is intended to meet applications where a 16-bit word length is required in collaboration with the low costs inherent in a one-chip, fixed instruction device.

All the 45 instructions are single word, 16-bit format, and the device is capable of operating on both 18 and 8-bit data words.

Known as the INS8900, the chip contains status and control circuitry, conditioned branch sense circuitry, interrupt logic and a portion of the clock generation circuitry. The two external functions required are a simple, single-phase clock and data buffering, both of which can be provided with off-the-shelf parts. By adding a ROM

and between one and four RAMs, all with on-chip address latches, the company states that a complete system can be implemented with no more than five packages.

A built-in microprogram controls the device during instruction fetch and execution, the microprogram being stored in a programmable logic array not accessible to the user.

For internal storage there are seven 16-bit registers, four of which are directly available to the user for data storage and address formulation.

The 8900 uses a unified bus architecture in which address and data transfers occur over the same 18-lines. Like several other devices, it also has an I/O capability, where the flag output and jump commands can be used together to form a serial I/O port.

Software compatibility is maintained with the rest of the Pace family of processors and the same software development aids, including the Pace Universal Development System, can be used.

PoS stock control system

POINT of sale stock control is the prime application area for a new micro-based small business system developed by Ego Computers. With software that has been developed in co-operation with the motor trade, the system comes with a growing range of applications packages for the small retail, service or manufacturing business.

The basic system is supplied with 32K of memory, together with twin floppy discs, one video terminal and a 120 chips matrix printer. This can be expanded to support up to 128M bytes of memory, 16 terminals, 16 printers and 16M bytes of floppy or hard disc.

The operating system uses mainframe software technology to provide a real time, multi-programmable virtual operating system that places no practical

limit on the size of program that can be run. Irrespective of memory size.

Pricing has been set by Ego at a competitive level, with a basic system complete with point-of-sale stock control software, retailing for £8,500.

Static CMOS RAM from Nippon

WITH the lower power requirements of battery operated systems in mind, NEC Electronics (Europe), the European sales arm of Nippon Electric, has introduced a 1K bit static CMOS RAM, called the UPD319.

Organised as 256 words by 4 bits, the 22-pin device has TTL compatible inputs and outputs. Normal operation requires a 5V supply, but the device can retain data down to 2 volts.

Still growing—with more firms, and more visitors

IT is a feature of all computer industry shows that the smallest companies get the most publicity out of their investment — and Compec Europe 78 was no exception.

The Computer Weekly-sponsored exhibition which ran from Tuesday to Thursday of last week at the Centre International Rogier in Brussels, kept up its growth record, with more companies exhibiting and more visitors attending than ever before — 5,002 in all. And while the large, well-known companies were broadly satisfied with the outcome, most of the little ones were ecstatic.

Among British companies in the latter category, Garage Management Services of Woking was enthusiastic at the response to its products from potential non-exclusive distributors in the Benelux and other European countries.

Starting out to provide payroll services to oil companies and to manage garage sites, GMS turned its hand to microelectronics four years ago, and developed a self-service console for petrol pumps.

Compec Europe was chosen as the launch-pad for a new communications product, a low-cost, attractively-styled telex machine for the home.

The Mintell-X is built around the GMS Intel 4040 4-bit micro-based processor, and is aimed at journalists working at home, building altes and similar situa-

TIM PALMER REPORTS FROM BRUSSELS ON COMPEC EUROPE

This unique British product is controlled by three Intel 8080s and features two printers (Dialo HyType 2 or Qume at present), one of which prints the account name on the cheque, while the other adds the account number, branch code and sort code in high definition Magnetic Ink Character Recognition symbols. OCR-A and B are available, CMC-7 will follow shortly and other codes will be added later, Rochford Thompson produces its own delay wheels for the printer.

Dissatisfied with the standard ribbon cartridge supplied by the printer companies, Rochford Thompson has designed its own reloadable ribbon carrier which

Minifloppies feature in the Rair Black Box, heavily promoted on the Compec stand, although not featured among the exhibits. The Black Box is a microcomputer built around the Intel 8085, and features two minifloppy drives.

Rochford Thompson was on the look-out for European agents for its revolutionary Weseco 1240M cheque printer and encoder.



Exhibiting for the first time at Compec Europe, Trend Communications featured the new 800 keyboard end-receive terminal, which is also available in automatic and receive only versions, and runs at up to 30 cps. For the communications engineer, the company featured the new Test Set 1-a-1, which includes synchronous and start-stop sequences for testing modems and multiplexers.

Fastest printer makes an impact

PLENTY of products from US and UK companies were on display on the stands of Benelux distributors at Compec Europe, and some of these companies also showed significant products of their own development.

Datua CD1 of the Netherlands had two notable items on display: the Documentation DOC-3000 line printer, and the General Robotics MVT/X3 desk-top computer.

Running at 3,000 lines a minute being impact technology, the IBM 1403 and 3811-compatible DOC-3000 is claimed to be the fastest impact printer in the world.

Why, it might be asked, should anyone want one of these machines when laser printers like the IBM 3800 run so much faster? The answer lies in the price — about £80,000 for one, the figure falling rapidly for quantities — and the need to back up laser printers in important applications. The laser printer can run four to six times as fast, but its price is much higher.

The MVT/X3 (offered in the UK by Gammat Associates) includes in a single desk-top unit, a 12 lines by 40 columns Burroughs plasma display, a

Honeywell keyboard, three minifloppies from Micropolis, a 132 column 80 cps Canonics printer, and a DEC POP-11/02 microcomputer.

The minifloppies offer over a Megabyte storage in total, and have a better than 10 millisecond read-write time track to track, compared with the industry average of 20 milliseconds.

Hawker Siddley Dynamics Engineering is determined to become a major force in microcomputer control applications, and featured its 8080-based Sequel user programmable plant and process control system, which was designed to meet the intractable problem that process engineers are suspicious of computers and dislike handling over their applications to specialists for programming.

Vector International of Brussels sells the Sequel system in the Benelux market, and also showed its own 8085-based microcomputer card, which it has assembled into a number of products including an electronic cash register. The company's biggest contract so far worth £150,000, is for systems to control the loading of petrol into tanker trucks.

makes the task of changing the ribbon much simpler, and 200 u manih are in demand in the US.

Seven of the machines have been sold in Australia, and two have been taken by Barclays Bank, which will follow up with a big order after successful trials.

Prices for the printer, which is backed by a floppy disc, start at £20,000 to £25,000 and drop sharply for quantity orders.

New from Trivector is the addition of hardware floating point to the Trilon 3 microcomputer system built around three Zilog Z80A micros. The company was also giving visitors a sneak preview of the TILL ledger system which runs on Trilon 3 and will be launched shortly.

Transdata's hottest properties at Compec were the new 318 paper-tape code converter, which is programmable and uses an 8080 so that any code can be handled, and the 316 extra wide keyboard printer terminal, which prints across 183 columns.

Here, there, and everywhere

COMPEC would not be complete without some light relief on the Modular Technology stand, and Repko BV, the company which distributes Modular Technology's products in Benelux, kept up the tradition.

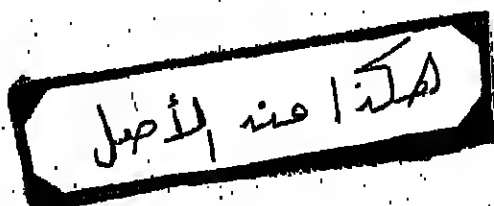
Repko was in charge of the stand information system, and last year used a PDP-11 to control the message distribution. This year, at the last minute it was found the DEC mini would not be available, so a personal computer was hastily acquired from the MHL hobby shop in Belft.

Marie Repko (at the terminal in the picture above) quickly wrote a program for the Motorola 6800.

based BWTP computer which enabled the same message to be distributed to 20 different display and printer terminals around the exhibition.

This minicomputer fully lived up to its "ubiquitous" tag, turning up on most of the stands at the show, and Repko, which received its first four interlock pocket interface testers from Modular Technology, lost three of them to exhibitors who saw the devices in use for installing the modems for the information system — and promptly bought one. Three hundred minicomputers were sold in Holland last year, and another 600 are expected to go this year.

COMPUTER WEEKLY'S NEW JOURNAL IS TURNING OUT TO BE A LOAD OF PULL



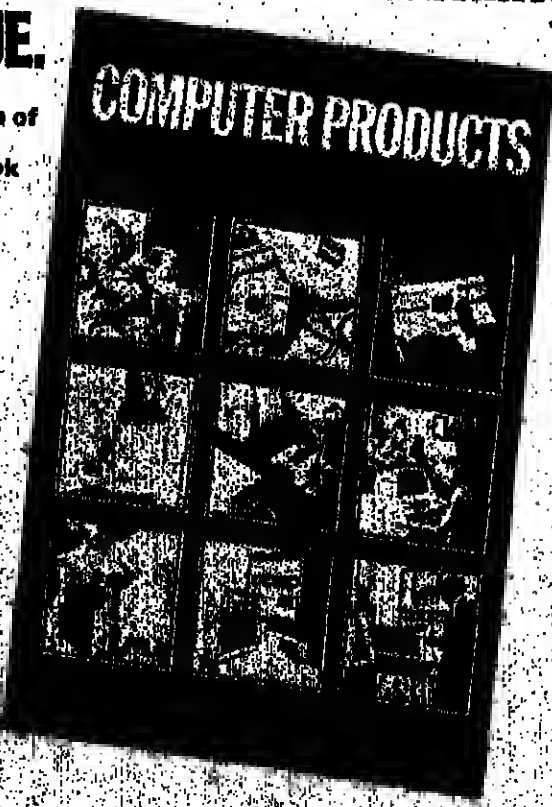
LAUNCHED SEPTEMBER 1977-ALREADY AVERAGING 2500 ENQUIRIES AN ISSUE.

This big product-news journal, within six months of its launching, is itself big product news! Our latest issue received 3,500 enquiries and took where they're coming from! A precision-planned readership comprising 16,000 key computer executives in the U.K. and 24,000 in Europe... while terms of circulation control have now been extended to include 6,500 electronics design engineers, most of them specifying equipment for OEM manufacturers, the rest DP managers and Systems House executives with direct purchasing power.

Each month Computer Products International publishes a special supplement covering a particular range of hardware. In May, we're spotlighting Microprocessors. In June, Teleprocessing Monitors, July Plotters and in September 8-bit Minicomputers.

But whatever computer product or service you're offering, an advertisement in CPI will give you a lot of new pull.

For more facts, ring Display Ad. Manager Steve Measures on 01-261 8000 or direct line 01-261 8293.



First, CA-DYNAM/D now, CA-DYNAM/T tape library management system for DOS, DOS/VS

Put simply, CA-DYNAM/T takes the curse off tape library management under DOS, DOS/VS operating systems.

It makes life simpler for the programmer; frees the operator from all of the inherent hazards of manual control of tape libraries.

CA-DYNAM/T makes sure... automatically... that the right tape is input — and that only valid scratch tapes are mounted for output.

Other benefits: Security isn't the only benefit. Throughput improves enormously due to elimination of reruns

and far more efficient use of tape drives — not to mention the operator's time.

Plus... lots of useful features to streamline tape processing operations, among them:

- Automatic RERUN facility —
- Fully automatic multi-file and multi-volume handling —
- Automatic release of tape work files —
- Use of alternate data sets for input —
- Total tape file security through matching password preventing accidental erasure and unauthorized access to confidential data —

- DOS, DOS/VS release independent — no modifications to JCL or programs required —
- CA-DYNAM/T logs exceptional occurrences for audit trail —
- provides comprehensive reports on all tape activity —
- Allows for control of unlimited file generations —

Why not be among the first to enjoy all of the advantages of automatic tape library control by CA-DYNAM/T?

Installed in 15 minutes, CA-DYNAM/T is available for a 30-day evaluation period without obligation. Call your nearest CA marketing representative today!

☐ Please call me, I'm interested in knowing more about CA-DYNAM/T.

Name

Title

Company

Address

City

Telephone (area code)

Computer

System

COMPUTER ASSOCIATES

David Tork
Computer Associates
(U.K.) Ltd.
Park House,
Park Street,
Maidenhead, Berks.
Tel.: (0628) 30315



The Scope CTM 70 Model 900.

Scope in UK for a West German range of systems

FACILITIES for multiprocessing, object code compatibility and upgrading were the main reasons behind Scope Data Systems' decision to market the West German-made CTM 70 range of small business systems in the UK.

Scope had for two years been looking for a system with these attributes, says managing director Geoff Poskitt.

The four-strong range is based around a 400 nanosecond processor that can be upgraded in the field from 16 to 128K bytes of MOS memory in 16K steps. Languages available include Basic and Macro Assembler. The basic unit, the Model 600,

has a keyboard, a 1,920 character VDU terminal, a 140 chps matrix printer and ledger processor and a typical configuration costs £11,000.

The Model 700 includes up to four floppy disc drives with a capacity of up to 638K bytes per drive. The Model 700 can be used for word processing applications, and has an average price of £13,000.

The Model 800 costs about £20,000.

Multiprocessing is the key attraction of the Model 900, which can have up to 16 video terminals, each with its own processor. Prices range from £25,000 to £100,000.

Automation will demand human flying squads

AUTOMATION in industry will not necessarily lead to mass unemployment, but it will require a fundamental change in human attitude to job training and retraining to allow the formation of "human flying squads" to cope with breakdowns.

This view was put forward by Robert Bass, of British Sugar in a lecture at the Institution of Electrical Engineers in London.

He traced the history of process control in industry, pointing out the distinction between continuous processes, which had been easy to control and manage, and batch processes which had invariably caused industry some headaches. Initially, the monitoring of such

processes fell to an elite of instrument engineers, until the advent of the microcomputer.

Such equipment could monitor and control many batch processes, but even though extremely reliable, it did break down, and the result was often catastrophic.

Now, with the advent of hierarchical systems based on the use of one microcomputer per system, the engineers developing them had an even greater responsibility to industry to ensure that they worked.

Bass pointed out that the systems could now, theoretically, run themselves; but inevitably they would break down, so there would still be a need for human intervention. "After

all", he said, "all companies are in business to make money, and the less time that can be made out of even a short process breakdown can be enormous."

He indicated that industry is beginning to think in terms of the measurement of its employee's flexibility to work changes as a possible criterion for employment, and that that flexibility had to be part of a more general atmosphere towards expecting change.

These employees would not be employed to run the equipment while things were going well, he indicated, but would be there to keep the processes running when the control equipment failed.

South Africa seeks to end reliance on foreign 'technological blackmail'

By Emond Fronk

A LEADING South African computer expert believes that the country can minimise the danger of "foreign technological blackmail" through the rapid development of local hardware manufacture.

Morris Cowley, chairman of

Ammerco Computer Services, the Anglo American Corporation's in-house computer operation, and chief executive of its commercial computer company, Computer Sciences, says three logical steps must be taken to lessen the country's dependence on multinational suppliers.

The first step, he suggests, should be the creation of a domestic computer leasing operation to remove the financial burden of funding rentals from local manufacturers.

Cowley believes that the second step should be the development of a "mini-computer" manufacturing industry financed through South Africa's Industrial Development Corporation to reduce dependence on the multinational suppliers of mainframe units.

South Africa, he says, should follow the example set by both Israel and Japan, which broke into computer manufacturing via "midsize".

Clusters of smaller computers, he adds, can be viable substitutes for large mainframe units.

The third step advocated by Cowley is the establishment of a "third party" maintenance operation geared to servicing existing mainframe units if and when the multinationals decide to abort their South African operations as a result of political pressures.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

SHAREHOLDERS in Control Data have narrowly approved two changes in the articles of association which will make it more difficult for another company to succeed in a takeover bid. They also rejected a motion sponsored by church organisations which would have prevented CDC from trading in South Africa, only 4 per cent of the shares being voted in favour.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

NEWS IN BRIEF

Micro impact on universities

THE Computer Board is studying the impact of the microprocessor on university computing facilities.

The working party, under Dr Jim Alty of Liverpool University, is expected to provide an interim report soon and is likely to conclude that university computer departments should play a central role in ensuring that exploitation of the wide potential of micro applications is effectively co-ordinated.

Waiting list

THE through council of Sandwell, West Midlands, is considering computerising its council house waiting list, with tenants in all area housing offices, supplying information to officials and families. But some councillors doubt that the £20,000 expenditure would lead to any reduction in waiting time.

Clusters of smaller computers, he adds, can be viable substitutes for large mainframe units.

The third step advocated by Cowley is the establishment of a "third party" maintenance operation geared to servicing existing mainframe units if and when the multinationals decide to abort their South African operations as a result of political pressures.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

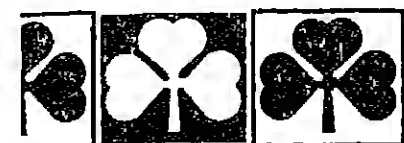
Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.

Although he does not believe that the US will impose a general embargo on computer sales to South Africa, he says that the country depends too heavily on computers to have its future crippled by the whims of foreign governments.



APPOINTMENTS IN IRELAND

Recruitment in the Emerald Isle

By Ray Hewlett

Ray Hewlett, managing director of Derritron (Eire) Teorente (Cybergraphics), looks at two organisations in Ireland which encourage new industries to settle in that country.

IT is sometimes difficult to equate high unemployment with a surplus of jobs over applicants. It is a known fact that in the UK there are 1.5 million unemployed, yet the computer industry has "jobs chasing people".

The NHS cuts back in expenditure yet the computer installation within this, the country's largest employer, is 12% below minimum requirement to operate and maintain a minimum service for the patients.

This probably results from school curriculums still biased towards the arts and colleges of further education, arranging courses such that only one per cent of them include courses which could be useful to a prospective programmer.

Take all these problems, add to them a community more used to horticulture than general industry coupled to years of an accepted high level of unemployment, at present 10% of the employable community, and you have some of the problems associated with recruitment in Eire.

Yet there is probably as much and, in some cases, more help given to attract companies to set up business, recruit and train staff in this part of the world than any other similar areas within the UK.

This article will discuss the two organisations within Eire whose job is to encourage new industries to settle in that country, and examine the system they operate for recruitment and training.

The total workforce in Eire has changed little over the past one and a half decades. In 1963 it numbered 1,122,000, 1973 — 1,118,000 and 1977 — 1,200,000. In 1973 some 59,000 were employed in the service industries which at that time was an increase of 16,000, and it is believed that this upward trend of people employed in services such as computer bureaux and allied industries is continuing to grow.

There are two organisations responsible for promoting industrial development: Industrial Development Authority and Gaeltearra Eireann.

IDA — this authority was formed in 1948 as part of the Department of Industry and

Commerce, but is now an autonomous state body. In 1977 it was allocated by the government £85 million to spend on industry. The IDA's main task is to encourage home industrialists and industrialists from abroad to set up manufacturing operations in Eire.

The IDA programme also includes service industries such as engineering consultants, process engineers and computer software houses, provided they operate internationally or have experience not available in Ireland. These are considered for assistance in setting up offices for foreign work, many of which qualify for tax relief.

The Authority administers all the financial incentives available to industry in the greater part of Eire.

Gaeltearra Eireann — this development organisation is responsible for the economic development of the Gaelteacht areas, which are those parts of Eire where Irish is the main spoken language.

These incentives include: a) grants of up to 60% for building and new equipment; b) up to 100% training grants with assistance provided in recruitment selection and training; c) low rent factories built to promoters' specifications; and d) exemption from tax on profits generated by exports.

Besides these financial aids, Gaeltearra can participate in the share capital of a company from a minimum of 26%.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Commerce, but is now an autonomous state body. In 1977 it was allocated by the government £85 million to spend on industry. The IDA's main task is to encourage home industrialists and industrialists from abroad to set up manufacturing operations in Eire.

The IDA programme also includes service industries such as engineering consultants, process engineers and computer software houses, provided they operate internationally or have experience not available in Ireland. These are considered for assistance in setting up offices for foreign work, many of which qualify for tax relief.

The Authority administers all the financial incentives available to industry in the greater part of Eire.

Gaeltearra Eireann — this development organisation is responsible for the economic development of the Gaelteacht areas, which are those parts of Eire where Irish is the main spoken language.

These incentives include: a) grants of up to 60% for building and new equipment; b) up to 100% training grants with assistance provided in recruitment selection and training; c) low rent factories built to promoters' specifications; and d) exemption from tax on profits generated by exports.

Besides these financial aids, Gaeltearra can participate in the share capital of a company from a minimum of 26%.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.

Both authorities feature extremely efficient training schemes, and the IDA provides training grants of up to 100% of the cost of agreed training programmes for workers in new industries.



Cantrell & Cochrane
DUBLIN

C & C is the largest Soft Drink manufacturer in Ireland, and is jointly owned by Allied Breweries and Arthur Guinness & Son.

The Computer Services Department, based on a 1901T, supplies the full range of development and support services to C & C and other associated companies within the Group.

We are committed to further systems development, particularly in on-line order processing/distribution. We are currently examining the feasibility of a communications network.

To assist us in our plans, we require the following additional staff

(a) Systems Analyst — To £6,100

He/she should be able to demonstrate the design and successful implementation of a major system. It would be desirable that he/she had knowledge of distribution.

(b) Analyst/Programmer — To £5,200

He/she should have worked and assisted in the design and successful implementation of a major system. 2/3 years' experience in Cobol is essential.

(c) Programmer — To £4,290

He/she should have at least 2 years' solid experience with Cobol.

Please forward your curriculum vitae to

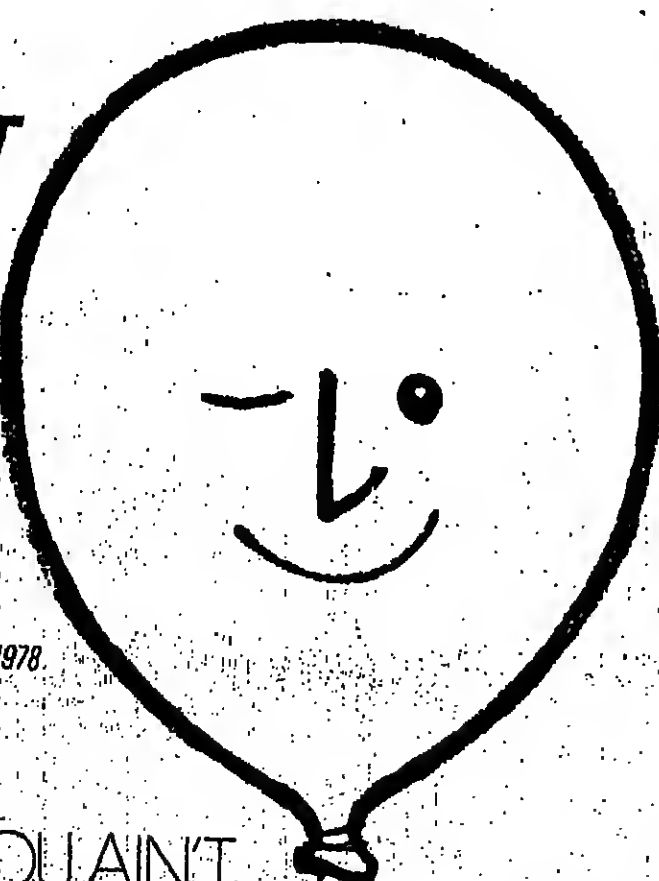
Personnel Manager
Cantrell & Cochrane (Dublin) Ltd.
Kilmore Park West, Dublin 10
Telephone: 366611

LOOKING FOR PEOPLE WHO ARE BUYING COMPUTER SYSTEMS?

INDEPENDENT SURVEY REVEALS

35,139* businessmen responsible for management and computer services read Computer Weekly every week... 19% more than any other computing publication surveyed.

*N.B.R.C. Businessman Readership Survey 1978.



YOU AIN'T SEEN
NOTHIN' YET

COMPUTER WEEKLY

Our display advertisement manager, Harry Wilson, is waiting for your call on 01-261 8359.

Nato to call for bids

● From front page

perience from military work in the UK.

By the time the calls for bids are made, several of the competing firms will probably have aligned themselves with partners in consortia. Leasco Software says that it is currently in the process of looking at suitable consortia to get involved with.

It is understood that it could involve an investment of about £250,000 merely to put together a bid.

The competition for the Nato contracts will be extremely fierce because even though most of the work will be in Europe, large US contractors not normally active on this side of the Atlantic will be entitled to bid by way of the massive US involvement in Nato.

A Nato spokesman in Brussels revealed that the command and control network was discussed at the last conference of member country armament directors in Brussels about two weeks ago.

But whichever firms or consortia win the contracts, work is not expected to start until next year.

Cost saving

A RE-USABLE ribbon carrier has been developed for Qume and Duhlo daisy wheel printers allowing the use of cheaper replacement ribbons that cost without a cassette. This saves the cost of the throw-away cassette, which is as much as the ribbon itself. The user loads the new ribbon into the carrier, then fits the carrier to the printer in the normal way.

DG launch

TWO industry compatible magnetic tape subsystems have been introduced by Data General for use with Nova and Eclipse minicomputers. Called the Model 6026 and Model 6037, both run at 75 ips. Recording densities are 1800 and 800 bpi on the 6026 and 800 bpi on the 6037.

Tornado prediction

SCIENTISTS at the US National Oceanic and Atmospheric Administration's Severe Storms Laboratory in Oklahoma have devised a system using Doppler radar and two computers that can predict the formation of tornadoes before they form. The Doppler radar senses the size and movement inside thunderclouds of mesocyclones, the precursors of tornadoes, and these are displayed on colour VDU.

Court system

A COMPUTER system designed specifically to meet the demands of magistrates' courts has been introduced by ICL. Called the Magistrates' Courts System, it can handle the automatic production of fines and other payments received, and of computerised court lists.

Programmers or Programmers/Analysts

£5500/£6000

Southern Ireland

Our client, a manufacturing company with a recently established ultra modern plant, within 1 1/2 hours drive from Dublin, requires experienced Programmers for their up-to-date installation.

Currently programmes are written in RPGII but our client requires a minimum of 2 1/2 years' programming experience in either RPGII or COBOL. Applicants will be given training where necessary. The opportunity exists to move into Systems Analysis for the Programmers with a good manufacturing background.

The company offers these outstanding opportunities to secure very interesting work, with great scope for successful candidates who have the initiative to progress within an expanding department. In addition to a competitive salary and excellent working conditions in a new installation there is a life assurance and pension scheme. Assistance will be given with relocation costs where applicable.

Please write or telephone Gerald Dalmore at the Dublin office (0001 782170/88) or Graeme Ridler at Kingston D1-549 3212.

Software Engineers/Programmers

£5000-£7000

South Coast of Ireland

The job will involve working on the development and manufacturing of process control systems. One of these systems, the DECADE System is intended mainly to control Plastic Extruders. It consists of as many as five systems as there are extruders to be controlled, all linked to a central data terminal. Each on line system, plus the intelligent data terminal incorporate a PDP11 computer. Two to four years' experience of Assembler level programming is necessary for these positions. A B.Sc. would also be helpful as would experience of any of the following: Mini Computer or Real Time programming, Process Control applications or Digital Computing.

These positions are in a new plant and therefore offer genuine scope

APPOINTMENTS IN IRELAND

RANK XEROX REQUIRES SENIOR PROGRAMMER £5500 plus

We have a vacancy for a Senior Programmer in our Computer Department based at Glasnevin in Dublin. Main responsibilities include writing and maintaining computer programmes on an IBM System III Model 12, using Cobol and R.P.G. II and providing technical advice to the D.P. Manager. Candidates should have at least three years programming experience mainly in Cobol and preferably some System III experience.

As expected from an important company fringe benefits are excellent: four weeks leave plus holiday, free health insurance, free life and accident insurance plus a superb pension scheme. Interviews will be held in Ireland or U.K.

Write or phone, today for an application form to:

Ms M. Gannon, RANK XEROX (Ireland) Limited, Glasnevin Industrial Estate, Fingale Road, Dublin 11, Ireland. Tel. Dublin 301833.

YOU AND RANK XEROX
We'll do even better together.

Programmer Analyst

B+1 is a major Irish Company involved in International Transport operating Car Ferry services across the Irish Sea and a comprehensive range of freight services to Britain and Europe. The Company is presently engaged in developing an On-line Reservations system incorporating a communications network servicing the various Passenger and Freight locations. The hardware configuration comprises two PDP 11/70 processors each with dual 67/MB Disks. The system, when fully implemented, will have in excess of 50 VDU terminals.

An experienced Programmer Analyst is now required to join the Computer Implementation team. This person will be

based in Dublin and will be expected to contribute to the design, evaluation and implementation of Planned Computer Projects. In addition, this person will be primarily responsible for the day-to-day operation of the application software.

A detailed knowledge of Fortran is essential, and whilst a knowledge of Assembler is desirable, candidates ideally should have experience of PDP systems using RSX 11M operating system. However, applicants with good commercial experience of real time On-line systems will be considered.

This position carries an attractive salary and fringe benefits include free travel facilities.

B+1
LINE

Applications marked "Computer" should be addressed to Mr. B. O'Rourke, Personnel Manager B+1 Line, 12 North Wall, DUBLIN 1.

BELFAST CITY COUNCIL City Treasurer's Department

The City Treasurer's Department is seeking applications for the following positions:

The City Treasurer's Department is seeking applications for the following positions:

A. SENIOR SYSTEMS ANALYSTS

Applicants should have a minimum of five years experience in the design and development of computer systems. They should be able to analyse business requirements and translate them into computer specifications. They should also be able to write and test computer programmes.

B. SYSTEMS ANALYSTS

Applicants should have a minimum of three years experience in the design and development of computer systems. They should be able to analyse business requirements and translate them into computer specifications. They should also be able to write and test computer programmes.

C. SENIOR PROGRAMMER

Applicants should have a minimum of five years experience in the design and development of computer systems. They should be able to write and test computer programmes. They should also be able to debug and maintain computer programmes.

D. PROGRAMMERS

Applicants should have a minimum of three years experience in the design and development of computer systems. They should be able to write and test computer programmes. They should also be able to debug and maintain computer programmes.

MEASUREX (IRELAND) LIMITED

A leading manufacturer of digital computer integrated measurement and control systems, continues to expand its operations. Measurex manufactures all of its systems for the European market in Ireland. In order to further serve the needs of this market and broaden the base of its Irish operations, an Engineering Group has been established in Cork, Ireland.

The Group's responsibilities are as follows:—

Manufacture of all computer software and control products across Measurex's product line in the Paper, Pulp, Energy Management, Rubber, Plastics and Metal Industries.

Support of the introduction of new products into the European market.

Implementation of product enhancements in co-ordination with California-based Measurex Corporate Engineering Department.

The following job opportunities exist:

SENIOR CONTROL ENGINEERS

Salary up to £9,500 per annum

Duties:

To work initially as a member of an engineering team involved in specification, planning, implementation and commissioning of computer-based digital measurement and control systems for the Pulp, Paper, Energy Management, Rubber, Plastics and Metals Industries in Europe. Rapid advancement possibilities to Project Leader with suitable qualifications and experience. Job will focus on control applications knowledge as implemented in Software for industrial control systems. The successful candidate will hold a good Engineering or Science degree in a relevant discipline with several years' varied experience of the analysis and control of industrial processes. Experience in the use of digital computers is highly desirable. Travel throughout Europe will be required.

CONTROL ENGINEERS

Salary up to £7,000 p.a.

Duties:

To work as a member of an engineering team involved in specification, planning and commissioning of computer-based digital measurement and control systems for industrial processes. The successful candidate will hold a good Engineering or Science degree in a relevant discipline. One to four years' experience in the field of process control in the Paper, Rubber, Plastics or Metals Industries desirable. Experience in the use of digital computers is highly desirable. Travel throughout Europe will be required.

Reply requesting application forms to:—

Colin McNaught
Engineering Manager
Measurex (Ireland) Ltd
Engineering Department
Mallow Road
Cork
Telephone: 021-58899

SENIOR SOFTWARE ENGINEERS

Salary up to £9,500 p.a.

Duties:

To work as a member of an engineering team involved in the specification, planning, implementation and commissioning of the software for computer-based digital measurement and control systems for the Pulp, Paper, Energy Management, Rubber, Plastics and Metals Industries in Europe.

Rapid advancement possibilities to Project Leader with suitable qualifications and experience. The job will focus on programming/software knowledge of real time process control systems with an applications bias. The successful candidate will hold a good degree in Engineering or Computer Science with several years' varied experience of real time computer systems. Travel throughout Europe will be required.

SOFTWARE ENGINEERS

Salary up to £7,000 p.a.

Duties:

To work on the development and manufacturing of computer-based digital measurement and control systems in the Paper, Rubber, Plastics or Metal Industries. To be involved in the installation and start-up phases of these systems. The successful candidate will hold a good Engineering or Science degree with course work in Digital Computing and Computer Programming. Experience in assembly level programming or Real-Time Computer systems is highly desirable. Travel throughout Europe will be required.

There is a contributory pension scheme and a bonus scheme. Relocation allowances will be payable if appropriate.

NORTHERN FEATURE MAY 25

Advertisers are reminded that there is a recruitment feature highlighting career opportunities in the north of England on May 25th.

To secure space in this important feature contact:

Owen Kelly 061-872 4211 or
Paul Windridge 01-261 8454

UNIVERSITY COLLEGE CORK, IRELAND SHIFT LEADER COMPUTER BUREAU

Applications are invited for the above permanent and part-time post. Equipment: 1 - MEG IBM 370 - 138 using VM/CMS (providing comprehensive computer services for Academic Departments and College Administration).

Qualifications: Applicants should have considerable experience in Computer Operations, preferably in a large multi-disciplinary unit. Previous experience in the supervision and training of Operators is desirable.

Salary: £3803 + 8 - £4886. A 12% Shift Allowance will be paid for 2 shift working when introduced.

Please send a postcard for further details and application form to: ESTABLISHMENT OFFICER, University College, CORK.

Closing date for completed applications: Wednesday 31 May 1978.

COMPUTER SERVICE ENGINEERS

DUBLIN c. £6,000 p.a.

Our client, a major force in computers and associated products in Ireland, are rapidly expanding their MiniComputer based business.

Currently involved in an extensive installation programme, they require bright and experienced personnel with the following background:

- 2/3 years' experience with advanced digital techniques on L.S.I. including microprocessors
- experience with electro mechanical devices, including discs and printers (e.g. Pertec/Draco discs)
- personality/ability to work in a customer service environment.

THE REWARDS:

In addition to the Job Satisfaction of working with a dynamic and successful group, you will have a high income package including a generous salary and a company car. First-class fringe benefits and a top grade training programme will also be provided.

YOUR APPLICATION WILL BE TREATED IN THE STRICTEST CONFIDENCE.

Telephone/write NOW to PAT RAFTER
Managing Director at Dublin 681168 or 681277 (quote reference CW014)

Insight Marketing & Personnel Consultants
33 Mespil Road, Dublin 4. Telephone 681166, 681277

DUBLIN Systems Analyst

Salary up to £6000

SCR has been retained to recruit a Systems Analyst for one of Ireland's leading retailing organisations.

Initially, the successful applicant will be called upon to undertake a full review of the company's Data Processing requirements with a view to producing a system that will serve the company's needs until well into the 1980's.

Currently the company operates an ICL 1901T and delivery of a mini Computer is imminent.

Candidates should be able to offer a minimum of 2 years' systems and programming experience, and experience of retail systems, COBOL or PLAN would be advantageous.

Excellent conditions of employment apply, including assistance with relocation expenses where applicable.

Initial interviews will be held in Dublin, Manchester, Birmingham and London.

CONTACT: Tony Deane, 061-833 0427 or 061-682 9756 outside office hours.

SPECIALIST COMPUTER RECRUITMENT LIMITED

SCRR

BIRMINGHAM 021-234 3774
Respect, Equity and Law House,
35-37, Great Charles Street, Oldbury, Birmingham B26 3JF
MANCHESTER 061-833 0427
Respect, Equity and Law House, The Pavilions, Manchester M1 1JF
LONDON 01-975 0671
Respect, Equity and Law House,
London W1E 1JF

ICS
BELFAST-DUBLIN-CORK

The Computing Service for Industry and Commerce

ICS is one of the largest and fastest growing computing services companies in Ireland. To sustain and support this growth we have a number of career opportunities available currently to key computing professionals. We seek:

SALES CONSULTANTS C. £10,000 + CAR ANALYST/PROGRAMMERS C. £6,000 +

To work on the most advanced and exciting computing services project currently in operation in Ireland—TIMELINK, the pioneer but now well proven interactive timesharing service with already in excess of 100 terminal users connected and an ever-increasing potential in prospect.

Opportunities are also available to be directly associated with sales and installation of Digital PDP 11 mini-computers within the computer marketing division of ICS which promises to be the fastest growing division of the company within the next two years.

Furthermore, it is matched directly to experience and ability. Ideally we seek at least three years' solid commercial data processing experience although knowledge of timesharing and/or Digital would be an advantage. Attractive fringe benefits including low interest house loans (after a suitable period of service) are offered in addition to top level salaries and conditions. Virtually unlimited scope exists for progress to supervisory and management positions in a rapidly growing and stimulating company.

Please write or call to Jean Rodgers for application form and details.

ICS Computing (Ireland) Ltd.
18 Charlemont Place, Dublin 2
Telephone 78 00 88
A member of the Ulster Bank Group

Operating Divisions:
TIMELINK Terminals
Batch Bureau Systems
Mini-Computer Systems

DUBLIN

To meet its development plans, Cement Roadstone Holdings Ltd., Ireland's largest industrial company, requires additional staff in its Computer Services Division.

The Computer Division services the data processing requirements of group companies, both at home and overseas. The equipment installed is an IBM 370/125 computer with transmission facilities operating under DOS/VS and POWER/VS. On-line facilities are now being added.

Applicants are invited for the following positions:—

1. Systems Analysts

- The persons appointed will:—
- have a proven record of successful development and implementation of computer systems;
 - be capable of working on his/her own initiative and communicating effectively at all levels of management.

Experience of on-line systems would be an advantage.

2. Programmers

- The successful applicants will:—
- have at least two years' experience of COBOL or IBM Assembler language;
 - be capable of assuming responsibility for programming projects.

Experience of on-line programming and/or systems programming would be an advantage.

Salaries and conditions are competitive and are in line with what one would expect from a leading industrial company.

Applications in writing, or telephone for application form, to:—

F. O'Sullivan,
Computer Services Manager,
Cement Roadstone Holdings Ltd.,
Saggart,
Co. Dublin, Ireland.
Telephone: (01) 614144/503444

Datasolve Datasolve Datasolve Datasolve

woman who comes to see us get the contract that's to their taste. And while we're on the subject of exotic dishes, we should point out that we can just as easily offer you a contract in a part of the world where home cooking means Bauern Bratwurst or Osso Bucco, as in the more familiar territories of Yorkshire pudding and jellied eels.

IBM
IBM Data 100
IBM System 3 & 32 Ops.
IBM 370 DOS VS
POWER VS Ops.
IBM 360/370 DOS GRASP Ops.

IBM
COBOL+IMS+OS+Herts
PL/I+TSO+IMS+South Coast
PL/I+IMS+South Coast
PL/I+OS+South Coast
IMS DB/DC+West London
OS SYSTEMS+Holland
COBOL+DOS+Surrey

ICL
PLAN+DRIVER+G11+Herts
2903 RPG11+London
2960 CONSULTANT+London
COBOL G11+City

PDP
RSX11+Italy

All vacancies are open to both male and female applicants.



**Before we find you
a permanent job,
we'll give you the
old third degree.**

But when we send you to an interview (and we won't send you to many), you can be sure that you stand a good chance of getting the job, and that the job will do things for your overall career.

Phone No.

Knight
your kind of jobs,
your kind of people



COMPUTER PERSONNEL APPOINTMENTS LTD.
Career Specialists and Consultants for
**D.P. MANAGERS, SYSTEMS ANALYSTS,
PROGRAMMERS AND**
OPERATORS
Midlands, Northern Counties and Scotland
For application forms apply to:-
85 New Street, Birmingham D2 4DU. 021-643 0951
01 Tel: 01: 723 5334.

JBA

West of London **neg to £7,000+ car or allowances**
If your present responsibility is to implement commercial systems and you feel that the next challenge is to join a sales support team then our client is currently able to offer such a position. The company manufactures mini computers and has enjoyed a steady growth over the last few years, a pattern which is expected to continue into the future. This position requires that candidates have a good grounding in basic d.p. disciplines as the company market a wide range of both tailor made systems and standard packages for general commercial use. The successful applicants will be able to work on his or her own initiative, and will be happy to fit in a small and friendly team.

Career prospects are dependent on the success of projects and resulting expansion. **Contact: Margaret Stevens**

Bracknell **up to £6,000**
A small development group has been established in Bracknell by an international engineering organisation to continue their expansion of the industrial systems market. They have immediate opportunities for mini computer programmers and specialists to work at all levels on these projects.
Applicants must have at least two years experience in industrial or process control applications using mini computers. A sound background of FORTRAN, CORAL, RTL/2 or Assembler is essential.
Excellent salaries, relocation expenses and the opportunity for commissioning work in various parts of the world. **Contact: Jim Baker**

Berks **c. \$5,500.**
Our client, a well established systems house, require a FORTRAN programmer to join a team developing special systems. Candidates should have a minimum of two years experience of FORTRAN in a technical environment and be capable of working at all levels in a project. Knowledge of an Assembler language and mini computers would be a positive advantage.
Salary is negotiable according to experience. Challenging opportunity in a professional team.
Contact: Jim Baker

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

TO LEARN MORE telephone or write Len Barlow or Terry Lloyd at:
PERKIN-ELMER DATA SYSTEMS
 227 Bath Road, Slough, Berks, SL1 4AX
 Telephone (daytime) Slough 34511
 (evening) Chorleywood 3507

North of London **£7,000**
Our client is a well-respected manufacturing organisation with a continuous and rapid growth record. This vacancy presents an excellent opportunity for an experienced communications expert to join a team working on the development of Distributed Processing Products. Ideally we are looking for technically competent individuals with a minimum of 2 years up-to-date knowledge of communications including an understanding of hardware and software developments in this area. The person appointed will be responsible for providing technical direction to the company's communications policy. The range of benefits offered is extensive and include relocation expenses and regular career assessments.

Contact: Margaret Stivana

A leading U.K. consultancy, with many projects underway throughout Europe, seek to increase their on-site documentation staff with a major Company in Italy. The position involves understanding inini computer technology from a software point of view plus a thorough knowledge of applicatuna. Programming ability in at least one language would be an asset. The successful candidate will be either a practising Technical Author or a Programmer with writing skills who would enjoy this aspect of d.p. work. A knowledge of Italian would be an extra bonus.

Long-term possibilities, enjoyable locale. **Contact: Mike Cramer**

Computer professionals with more than 3 years experience who are determined to emigrate to Australia will benefit from our consultancy service. Initially, we advise and provide an assessment of your career prospects in Australia and, later, when your arrival there is imminent, you receive the concentrated services of our Associate company in setting up introductions to suitable vacancy positions in Australia. Since JBA commenced this service we have been extremely successful, arranging a selection of possibilities for people arriving there (mainly in Sydney and Melbourne) and the people concerned thereby find ideal employment very quickly.

Contact Mike Cremer



LOTHIAN REGIONAL COUNCIL

Computer Systems Development
ICL 2900 series

Edinburgh

Lothian is the second largest regional authority in Scotland and provides a diverse range of services to a population of 755,000. The Computer Centre is located in Edinburgh, a city rich in cultural and recreational facilities.

To meet the expanding demand for computer services the current I.C.L. System 4 computers are shortly to be replaced by an I.C.L. 2970/2960 configuration. There is a need to strengthen and expand the project development teams by the appointment of a number of Senior Systems Analysts and Systems Analysts/Programmers with varying backgrounds and levels of experience.

Senior Systems Analysts £4477-£5519

Candidates should have sound qualifications, a programming background and at least 3 years' relevant experience in system analysis. They must have demonstrated ability to accept responsibility for a major development project.

There are a wide range of applications included in the current work programme, involving both batch and T.P. systems covering the Financial, Technical and Administrative functions of the authority.

Analyst/Programmers £3957-£4915

Candidates should have considerable programming experience with at least 1 year's involvement in systems work. Although not essential System 4 or 2900 experience would be an advantage. The main language is COBOL but there are applications where USERCODE and FORTRAN are used.

Successful applicants will contribute both at a systems and programming level to the development of computer projects.

Starting salaries will depend on individual qualifications and experience. The above salary ranges are inclusive of current supplements and will be the subject of a national pay review effective from July 1978. Assistance may be provided with relocation, where appropriate.

Please write or phone for an application form from:

The Development Manager
Lothian Regional Council
Computer Centre
Warriston's Close (323 High Street)
Edinburgh

Tel: 031-229 9292
Ext. 2321

Software Systems



How long

— since you started a fresh project?

How long

— since you worked on a new computer?

How long

— since you visited a client abroad?

Too long?

Then you could be interested in talking to us. We, in Logica's Software Systems Division, want to talk to you if you are an established computer professional with direct experience in the following or related areas:

transaction processors
compilers/interpreters
operating systems

terminal emulators
filing systems
microprocessor software

We can promise you challenging work on varied projects, designing and implementing software on a wide range of machines. Some of the work is in the U.K. and there are opportunities to travel and assignments abroad if you wish. Logica provides a good package of fringe benefits and an environment which encourages career development within the Company. Salaries will be according to your experience and qualifications, generally in the range £4 - 8,000 p.a.

Please write to Kathleen Scott, Personnel Officer

Systems Engineering Group

Logica Limited

64 Newmarket Street, London W1A 4SE

or telephone 01-831 9711 for an application form quoting ref. SE/6

HALFORDS COMPUTER INSTALLATION IS GROWING

HAVE YOU THE POTENTIAL TO GROW WITH IT?

Our business is heavily dependent upon our ICL 1903A installed in 1971. We will replace it this year with a larger system to support our planned expansion into the 1980's to include

- Merchandise control through 600 POS terminals
- Management information systems using on line facilities.

We need to invest in people and will welcome your experience in

SYSTEMS · PROGRAMMING · OPERATIONS

If you have enthusiasm and potential to grow with us so much the better.

SYSTEMS ANALYSTS Around £5,000

You should have 1-2 years experience. It will be an advantage if you are familiar with retailing. Starting salary will depend on your experience, but should be around £5,000. Contact Tony Russell or John Shakespeare (extension 140).

PROGRAMMERS & SENIOR PROGRAMMERS c.£4,000/£4,500

At least 18 months COBOL experience is needed. If you have more (at least 3 years) and the ability to supervise a small team, you will be interested in the senior job. Salaries again depend on experience, but will be around £4,000 and £4,500 respectively. Contact Barrie Walker (extension 77).

OPERATORS & SENIOR OPERATORS Around £3,500/£4,000

Again, 18 months' experience (3 years for senior operators) including job set-up and file control. Applicants must be prepared to work shifts. Your initial income will be around £3,500/£4,000 respectively p.a. inclusive of all appropriate allowances. Contact Malcolm Rebelo (extension 115).

WHO ARE WE?

WHERE ARE WE?

WE OFFER!

We are Europe's leading retailer in the Auto, Cycle and Leisure markets.

The jobs are at our Head Office in Redditch, in rural Worcestershire, Birmingham and the West Midlands are all within easy reach.

• Progressive salary scales
• Staff discount scheme • Pleasant working conditions • Subsidised restaurant • Relocation assistance, or help in obtaining quality local authority housing, in appropriate cases.

Contact person named on Redditch (0527) 27601 or write to him at Halfords Ltd., Icknield Street Drive, Washford West, Redditch, Worcs. B98 0DE.

HALFORDS

A BURMAH GROUP COMPANY

UNIVERSITY OF EDINBURGH RESEARCH ASSOCIATE PROGRAMMER

Required by the UNIVERSITY of EDINBURGH RESEARCH UNIT. Applicants should possess experience in IMP (Interpreted Macro Programming) or ALGOL. The work will involve the preparation and testing of programs for the University's mainframe computer system. Salary will be in the range £3,100 - £4,500 per annum.

CONTRACT PROGRAMMERS IMMEDIATE CONTRACTS LONDON & SURREY 01-884 1522

M. & W. Computer Consultants
235 London Rd., Croydon

ALM need a SENIOR COBOL PROGRAMMER

We handle lead! If you can handle GEORGE 3 have 2 years + COBOL experience can take control of our programs want £4,500 Then telephone 01-606 4400 x 281 or write for an application form to Mr. H. V. Hall The Data Processing Manager ASSOCIATED LEAD MANUFACTURERS LIMITED 14/15 Graham Street, London, E.C.2

occ computer personnel limited

A Challenge in
Uxbridge

Support
Programmers
to £6,500
plus £600 allowances

New powerful IBM installation. COBOL and PL1 support team being established

To the uninitiated, the attractions of support programming are not always apparent. Some of these attractions are:-

- ★ Concentrated experience
- ★ Business involvement

The client is a major force in the food, entertainment and leisure industries, with sales exceeding £1,600 m. per annum. Data processing for the Group is provided by a large internal bureau being equipped with powerful IBM hardware. The bureau provides development, production and support functions to group companies.

The Central Support Team carries out

- immediate repairs to systems that fail
- optimisation exercises on existing systems
- systems acceptance trials

The team provides round the clock coverage, which requires each team member to be on standby at certain times each month. For this an allowance of £800 p.a. is paid. A radio paging system operates up to 40 miles from the Data Centre. All team members are expected, after a suitable period of familiarisation, to be able to deal with any of the bureau's systems.

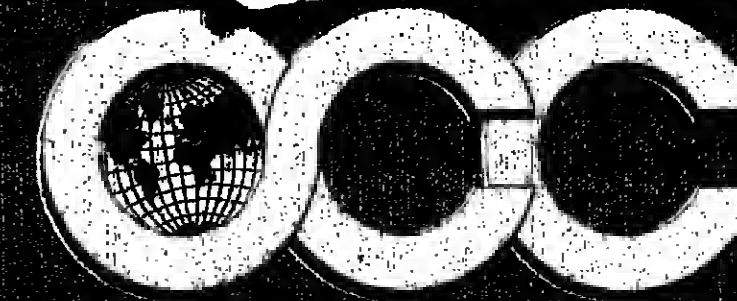
A generous relocation package is offered.

If these openings sound interesting, please ring me, Neville John, on 01-242 9356 (day) or Farnborough (Kent) 52017 (evenings and weekends), NOW to arrange a meeting or to discuss these positions further. We can arrange a meeting directly with our client at the Data Centre if this would be more convenient.

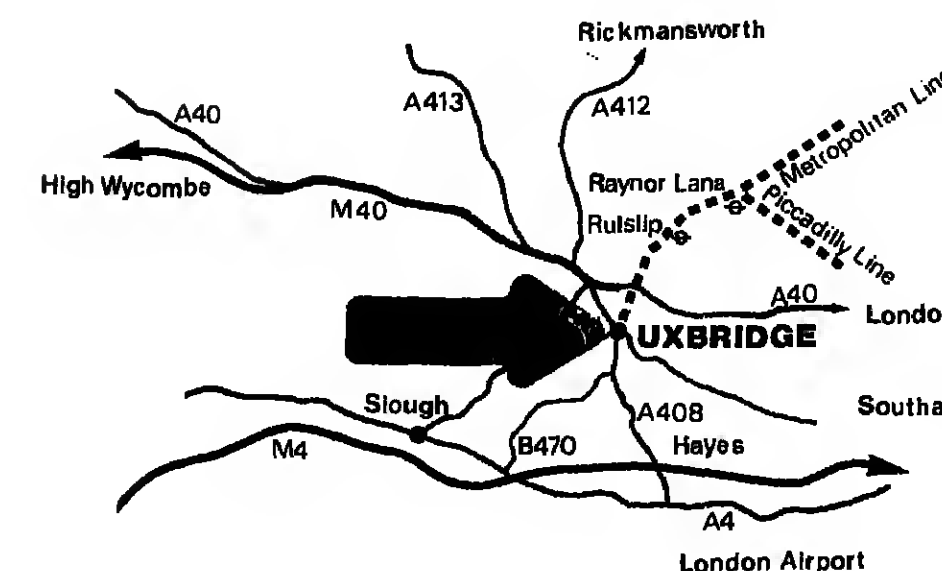
COMPREHENSIVE BACKGROUND NOTES are available to suitable candidates.



16 Bedford Row
London WC1R 4EB
01-242 9356
Telex 21120



Specialists since 1971
in UK and international
computer appointments



I am interested in the Support Programmer positions.

Name

Address

Tel. Home

Work

RECRUITMENT SERVICES

- * MINIMUM 12 MONTHS' EXPERIENCE
- * WIDEN YOUR COMPUTER KNOWLEDGE
- * PROGRESS TO ANALYSIS AND PROJECT RESPONSIBILITY

IBM PROGRAMMER

Our client, a sophisticated computer and technology company has openings for a number of experienced programmers. Candidates should have at least 2 years' experience on any high level language Co. offers

- * Development of real time systems.
- * Exciting and interesting work in up-to-date technology
- * Excellent career prospects
- * Subsidised lunch, pension scheme and other company benefits
- * Salary is £8,600

Ref: 1802

JUNIOR PROG

Very rare opportunity for ambitious person wanting to work overseas. If you have initiative, good education and approx. 6 months' COBOL, PL/I or experience of other languages then ring NOW!

- * Excellent training within world-wide organisation using modern technology
- * Responsibility for maintenance but will be more into development areas
- * Centrally based - AMSTERDAM
- * English speaking country
- * Salary 35,000 guilders (£9,750 p.a.)

Ref: 1446

PL/I PROG

Our client a major and successful concern wishes to strengthen its European programming team. Retaining IBM 370 hardware under DOS/VS, the co. seeks ambitious person with PL/I, CICS or COBOL being an asset. Co. offers

- * Involvement in development of new and exciting projects
- * Opportunity to work with an expanding organisation operating world wide
- * Centrally based - Amsterdam
- * Salary 40,000 guilders (£10,000) cost of living allowance and relocation expenses

ANALYST PROGRAMMER

Our client, an international engineering company retaining IBM 1/4 hardware seeks an analyst programmer with a minimum 4 years' COBOL experience. I.C.S.V. would be an advantage. The company is situated in a historical university town close to the Dutch-German border. Co. offers

- * Relocation expenses
- * Working in a new modern complex
- * Excellent career prospects
- * Salary around 40,000 guilders + OONUS

Ref: 1473

IBM PROGS

Our client, an American publishing company, has vacancies for COBOL programmers with at least 3 years' experience for their Amsterdam office. The company retains IBM 370 hardware and successful applicants will be involved in a variety of commercial applications. Co. offers

- * Excellent working conditions
- * Great career prospects in this progressive organisation
- * English speaking environment
- * Salary approx. 40,000 guilders (£10,000)

Ref: 1803

ICL PROG

Major U.K. co. based in rural Northampton, with one of the largest ICL 2800 installations in the country, seeks programmer with minimum 2 years' ICL COBOL experience. Variety of new developments coming up particularly in the stock control, warehousing and accounting areas. Co. offers

- * New and exciting development work
- * Excellent career opportunities in a growing organisation
- * Non-contributory pension
- * Discount on goods
- * Salary £4,800 + relocation expenses

Ref: 1485

PDP II PROGRAMMERS

Challenging and interesting career. Implementation of business applications on PDP11 using COBOL. Some interactive processing experience preferred. In return our client offers

- * Training in the analyst field
- * Good promotional prospects
- * Excellent co. benefits
- * Salary £5,000 circa

Ref: 3003

MINI PROGS

Prestige company based in America, Europe and U.K. are recruiting persons at varying levels from programmers to systems specialists for their new City offices. Having large DEC POP equipment, they seek people with exp. on any MINI but using ASSEMBLER. They offer

- * Extensive training in up-to-date technology
- * Excellent career opportunities
- * Training in RSK, RTII and RSTS
- * Chance to travel abroad
- * Salary £6,000 - £10,000 p.a.

Ref: 1478

PROGRAMMER

Our client is a major organisation providing comprehensive machine engineering and construction services to companies engaged in hydrocarbon development. Retaining IBM 370, under DOS/VS they seek person with 4 years' COBOL exp. with PL/I, RPG or ASSEMBLER as an asset. Co. offers

- * Variety of projects pertaining to administration within a rapidly expanding co.
- * Centrally based - BRUSSELS
- * English speaking environment
- * Settling in allowance for married or single persons
- * Salary approx. £18,000 p.a. - total package

Ref: 1474

ANALYST/PROG

Electronics manufacturing co working on a global scale seeks clear, logical thinking analyst programmer for their ICL 1900/2800 series equipment.

- * Control of small development or support projects
- * Supervisory exp
- * Full scale of projects ranging from purchasing to financial modelling
- * Subsidised restaurant/dining club
- * Salary £5,600

Ref: 1163

HONEYWELL ANALYST PROG

Manufacturing company producing a wide range of household goods is seeking an analyst programmer with at least 2 years' COBOL experience. The successful applicant will join a professional and enthusiastic team utilising Honeywell mainframe and preferably have had GCOS experience. Co. offers

- * Excellent working environment
- * Good career prospects
- * Life Ass. BUPA, LVs and 4 weeks' hols.
- * Discount on all company products
- * Salary to £8,000

Ref: 1403

SYSTEMS ANALYST

World-wide company which provides services to oil and construction industry has an immediate vacancy for systems analyst. Candidates should have at least 2 years' in the design and implementation of large commercial systems. IBM programming background would be an advantage. World-wide user contact. Co. offers

- * Excellent career prospects
- * Generous fringe benefits including LV's
- * Pension scheme 'S.T.I.S'
- * Salary to £7,000

Ref: 1480

SALESMEN/WOMEN

World-wide manufacturing company based in Amsterdam seeks salesman/women to be involved in marketing their hardware, software and ancillary equipment. Co. offers

- * Tremendous career opportunities
- * World-wide first-class travelling
- * Relocation expenses for married and single persons
- * Salary 42,000 guilders (£10,000) + commission + expenses.

Ref: 1339

PL/I PROG

Well-established O.P. division of major international trading co. is rapidly expanding and consequently seek Senior PL/I programmer (knowledge ASSEMBLER an asset) with significant years of experience. They offer

- * Variety of well-planned projects
- * Promotional prospects with a company who knows where they're going
- * Training in CICS
- * Staff restaurant
- * Salary to £7,000 p.a.

Ref: 1479

ICL PROGS

Our client is a city based financial institution retaining ICL 1900 hardware with a 1960 plan and for 19/19. They require person with over 12 months' ICL COBOL exp. and an asset

- * Exciting and interesting work in a fast moving development work
- * Excellent training - promotional prospects
- * 25% house purchase scheme
- * Non-contributory pension - free life assurance
- * Salary £5,000 neg

Ref: 1432

PROGRAMMERS

One of the most significant and forward-looking computer services industry in the U.K. and abroad provides a comprehensive range of services to a large multi-national. Retaining IBM 370 150 under OS, it seeks programmers with min. 18 months' COBOL and/or PL/I. They offer

- * Above ordinary programming rate systems only - free salary support or part of their specialist groups
- * Chance to move on to ANALYSTS
- * Excellent promotional prospects
- * Salary £5,500

Ref: 1451

Database Systems

Due to the development and redevelopment of their advanced computer systems, our client, with a successful DP services dept., wishes to boost its programming team. Currently retaining large ICL 1900 equipment running under GII, they offer excellent opportunities for persons with minimum 2 years' ICL COBOL experience to become engaged in the implementation of commercial and financial applications as senior programmers. Candidates should have PLAN experience.

This well known organisation is currently involved in the implementation and further development of IDMS database for one of their financial systems, offering persons who have reached a stalemate in their present company the opportunity to broaden their programming experience.

In addition, a competitive salary is being offered besides 6 weeks' holiday, subsidised restaurant and excellent sports and social club.

- * Opportunity to express leadership capabilities
- * Opportunity to progress into analysis and secure a good career path
- * Opportunity to learn IDMS Database
- * Opportunity to develop COBOL
- * Development of variety of applications

- * Close to EUSTON/KING'S X station
- * Competitive and progressive salaries
- * 6 weeks' holidays!
- * Flexi hours
- * Season ticket loan scheme (interest free)
- * Subsidised restaurant
- * Sports and social club

KNIGHT PROGRAMMING SUPPORT LIMITED

27 NOEL STREET, LONDON W1. TELEPHONE 01-734 0152/6 (24 HOURS)

OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM

Why not find out what is available in your area?

This is only a small selection of posts we have available at present. If however, you don't see anything to suit your requirements please do not hesitate to telephone us. We have a wide choice of posts at all party levels throughout the U.K.

For the above positions - please telephone 01-734 0152/3010 (24 hours) quoting the respective reference number, or write to our London office

CONTRACT DIVISION

OVERSEAS

IBM COBOL
IBM DOS PL/I 2 YR CONTRACT
PROJECT LDR IBM DOS PL/I 2 YR CONT
IBM SYS 3/370 COBOL
ANALYST PROG COBOL RPO ASSEMBLER
SYSTEMS ANALYST MUST SPEAK DUTCH
SYSTEMS MANAGER MUST SPEAK DUTCH

PARIS
PARIS
PARIS
BRUSSELS
HOLLAND
BRUSSELS
BRUSSELS

£200 pw + acc + exp
£330 pw
£200 pw + acc + exp
£420 pw
£200 pw + acc + exp
£400 pw
£400 pw
£800 pw

UNITED KINGDOM

IBM DOS VS COBOL
IBM COBOL IMS
IBM OL/1 COBOL
IBM MX IV PROGRAMMER
IBM IMS DATABASE DESIGNER
IBM PL/I DOS VS
IBM PL/I DOS VS
IBM PL/I OS

WILTS
HERTS
C. LONDON
MANCHESTER
N. ENGLAND
SURREY
ESSEX
MIDOX

£220 pw
£240 pw
£220 pw
£220 pw
£200 pw
£200 pw
£200 pw
£190 pw

IBM IMS PROGRAMMER
IBM OS PL/I
IBM OS COBOL
IBM OS SYS ANALYST IMS OS/VS
IBM OS COBOL
ICL 1900 PL/I DRIVER
PDP11/70 MACRO II REX II
PDP11/34 BASIC RSTS/E + COBOL
POP II A/PROG BASIC +
POP II CONSULTANT
POP II ENGINEERING BACKGROUND
SURREY 3700 1700 COBOL
UNIVAC 1108 EXEC 8 COBOL
POP BASIC +

BIRMINGHAM
BIRMINGHAM
N. ENGLAND
HERTS
SURREY
HERTS
ESSEX
GLOUCE
S. MIDLANDS
BIRMINGHAM
HERTS
SUSSEX
MIDLANDS
LIVERPOOL

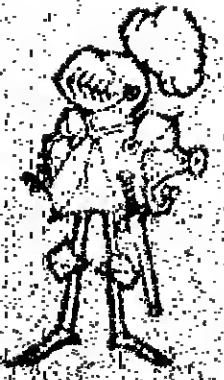
£225 pw
£210 pw
£210 pw
£240 pw
£150 pw
£220 pw
£220 pw
£220 pw
£220 pw
£220 pw
£220 pw
£220 pw
£220 pw

01-734 0152/3010

For Midlands and N. England requirements phone: 061-333 8341/3 (Manchester) or 021-238 1794 ext. 223 (Birmingham). For all other contracts phone London Office, Christine Kay or Dave Haydon, 01-734 0152 (24 hours)

KNIGHT PROGRAMMING SUPPORT LIMITED

27 NOEL STREET, LONDON W1. TELEPHONE 01-734 0152/6 (24 HOURS)
OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM



SYSTEMS ANALYSTS

To £6,500 MID ESSEX
A major manufacturing company is involved in expansion plans within their D.P. department and requires experienced commercial analysts especially those with real-time application involvement. Although ICL equipment is used your actual machine experience is unimportant. This firm offers generous relocation expenses and 4 weeks holidays, etc.

CW20/1 Annette

SUCCESSFUL SALESMEN

To £16K quota earnings U.K.
We now have ten different firms for both hardware and systems only companies who are anxious to meet successful salesmen in this industry. All firms have bonus schemes and cars or car allowance. Most positions in S.E. England. Four in Midlands.

CW 20/2 Michael

SENIOR CONSULTANTS

£6,500-£10,000 CENTRAL LONDON
Nine large, well-established consultancies wish to recruit systems people with all-round experience on third-generation equipment and the right personality to deal with clients who require first-rate service. Technical communications consultants are also required where in-depth implementation experience of IBM or ICL T/P message switching networks, etc., are essential. Excellent fringe benefits and prospects.

CW 20/3 Michael

FREELANCE PROGRAMMERS

To £260 p.w.
Apply now for the latest vacancies, IBM, HONEYWELL, DEC & ICL programmers welcome. Earn a summer holiday paid break plus an attendance BONUS. Ask for the Contracts Officer on 01-995 5485

CW 20/4 Irene

PROGRAMMER

To £6,500 NW LONDON
Our clients in the travel business are urgently requiring an IBM ASSEMBLER or ICL USERCODE programmer to work on Real-Time and DATABASE applications. A very good chance to take part in a major R/T installation at work. Very nice travel perks.

CW 20/5 Annette

PROGS/SENIOR PROGRAMMER

£4,000 to £5,500 S COAST/DORSET.
A major insurance group with the latest IBM OS. Installation is anxious to interview well qualified COBOL programmers who wish to enhance their career experience. Really excellent perks including Flexitime, Non C.P.S., 4 weeks hols. plus a lovely area to work.

CW 20/8 Annette

MINI COMPUTER PROGRAMMERS

£4,000 to £7,250 LONDON & HOME COUNTIES
If you have experience in ASSEMBLER or micro-code or communications for at least 1 1/2 years then a whole exciting field is open to you. We now have opportunities in SW, NW or W. London, Surrey, Berkshire and Hertfordshire for competent people in this rewarding field. The future is definitely going to be with the mini-computer professional. Telephone for details.

CW 20/7 Michael

TIME SHARING PROGRAMMERS

To £6,800 C LONDON
If you have had time sharing experience involving the use of FORTRAN, BASIC or ASSEMBLER, then we have four nationally known companies who would offer you an exciting job in pre or post sales support. Some offer generous bonus schemes.

CW 20/8 Michael

JUNIOR PROGRAMMERS

£3,000 to £4,300 SE ENGLAND
You have only 1 year's commercial experience? Then you are in great demand. We have a large selection of first-rate companies who need people like you. Some offer mortgage assistance to the right candidates after short period with them.

CW20/9 Annette

OPERATORS/SEN. OPERATORS

To £4,300 inc. MID-HAMPSHIRE
A major commercial ICL G11 user is expanding its present large installation to the 'new-range' ICL equipment and requires additional operating staff who will get the opportunity of working on the latest computers. Their perks include relocation expenses and subsidised restaurant, etc.

CW 20/10 Patricia

SHIFT LEADER

£4,500 inc. E LONDON
If you are looking for career progression with very good promotional prospects then apply now. Excellent IBM OS/VS installation with company benefits like 4 weeks hols, Non C.P.S. and a subsidised canteen.

CW 20/11 Patricia

OPERATORS/SHIFT LEADERS

To £4,000 inc. W1
Here is a very nice job. A 2-shift system having ICL 1900 equipment using G11. Vacancies exist for 2 Operators and a Shift Leader. A nice firm involved in Consumer Products. Active S.S. Club, cheap bar and restaurant.

CW 20/12 Patricia

SNR. OPS/OPERATORS

£4,000 to £5,500 inc. N LONDON
A major IBM 370/OS user is offering really excellent perks including high salary and paid overtime plus paid removal expenses. You must have a minimum 1 year OS experience though.

CW 20/13 Patricia

RECRUITMENT CONSULTANTS Universal Computer Associates Ltd. Data Express House 3 Prospect Place, Heathfield Terrace, Chiswick, W4 01-995 3883 (01-958 6138) EVENINGS



Tomorrow's World — Today at E.M.S.

4K-6 1/2 K MIDLANDS

Project Leaders. 6 plus.
Analysts & Analyst/Progs. 20 plus

Programmers, 20 plus Cobol, Cobol/Assembler, Basic

Our new multi machine Data Centre has opened in Birmingham offering a wide range of Computing Services to the entire UK Market. Results are significant. Following the successful marketing campaigns carried out we now need over 45 more staff urgently to assist with Project Control, Client Systems Design and Programming. An unparalleled series of assignment opportunities are available for you including the chance to work on our Honeywell Level 6 Turnkey Systems, Data General Turnkey Systems, ICL Timesharing Support

and Development using both established packages and assisting with Original Systems Development. Equally, we are currently implementing a major package design programme ourselves across a wide commercial and industrial sector. No-one seeking a Midlands based opportunity, with UK travel if desired, will find any better alternative than the new advanced Data Centre. Get in on the ground floor today and grow your career with the company's development. Help EMS get more results and we will help your career.

Turnkey Systems
Timesharing
Software Development
Consulting Assignments

Analysts
Programmers

Phone now:

Dennis Filby / Damien Handlip
EMS Consultants Ltd.
9th Floor, Tricorn House
Fiveways, Edgbaston, Birmingham
021-454 7906/7/8

5 1/2 K - 8 K. North West

The EMS Consulting Group has a large series of further vacancies for experienced Analysts and COBOL Programmers to work on assignments throughout the Lancs, Cheshire areas on commercial and distribution projects. Equally, longer term opportunities will be available for Senior Analysts within our Consulting Divisions to take Project Management responsibilities for the introduction of Turnkey Systems supporting a wide variety of applications requirements. We offer excellent salaries and a series of career development opportunities second to none. Relocation assistance will be paid where appropriate.

Consultant: Don Philp / John Wood.

Telephone urgently: 0782-623665. Don Philp / John Wood

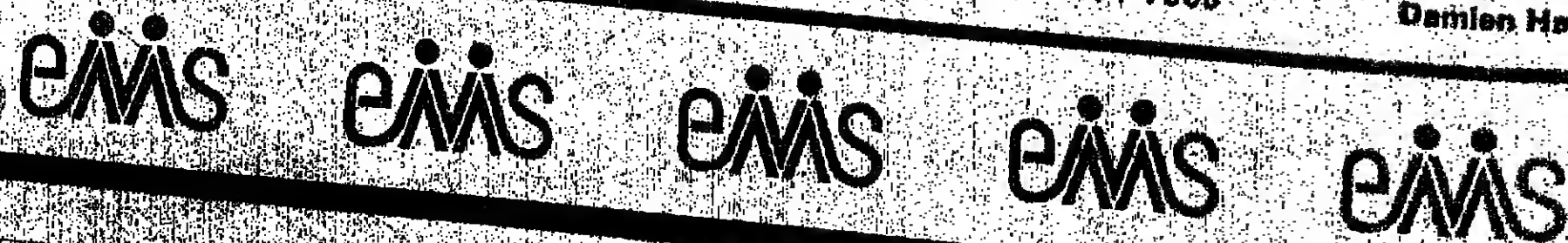
Honeywell Experience?
Need a top career opportunity
and a pay rise?
UK and Europe

EMS, as almost the entire Honeywell market know by now, are the leading Honeywell Consulting employers throughout the U.K. Following the outstanding success of Honeywell's marketing policies during the last 12 months, subsequent sales of equipment have resulted in demand for EMS support services hitting record levels. Subsequently, we urgently need experienced Analysts and Programmers plus IDS/TDS and GCOS staff for a wide variety of vacancies throughout England and Scotland. Equally, the successful development of our Level 6 Turnkey Systems Division has resulted in the need to employ a further 45 staff in this area alone to custom built client application systems. Irrespective of location, E.M.S. have opportunities, Equally, for staff with 2 or 3 more years' experience, relocation assistance would be paid where necessary for candidates wishing to join any of our project teams throughout varying UK locations. For a top career opportunity working on L66, 64, 62 and Level 6's, E.M.S. offers the ultimate in progress. Join the Market Leaders and see life at the top.

Consultant: Damien Handlip.

Telephone today for an application form: 021-454 7906

Damien Handlip



Ever thought of working for a computer service organisation?



We invite computer people
to talk about
Unilever Computer Services Limited

At UCSL, we can offer a great deal. We have the backing of the giant Unilever Group and, at the same time, the friendly working atmosphere of a highly successful computer bureau. But UCSL is more than just a bureau. It's a leader in the computer services business, with large utility processing resources and advanced networking capabilities.

If you've got practical experience in software, systems or programming, and would like to work in the London area or in Sussex, come and meet us over a drink.

at the New Ambassadors Hotel
Upper Woburn Place, London W.C.1.
(near Euston Station)
between 5.30 - 8.30 pm
on Monday 22nd or Tuesday 23rd May

If you can't make it at these times but are still interested in meeting us, contact:

Phil Probert, Personnel Manager, UCSL,
Station House, Harrow Road, Wembley, Middlesex
Telephone: 01-903-1414

UNIVERSITY OF ABERDEEN

RESEARCH STUDENTSHIPS

Applications are invited for SRC studentships, totaling 10, to be held from October 1978 for research in the areas of: **Systems, leading to PhD degrees.** One of the successful students will be expected to work in some aspect of PRECIS (Prototype Relational System with Codeyl Interface) and the other in a joint data base project with ICL at Stevenage, Herts, using an associative memory. SRC studentships may be available for both.

Any British student holding or expected to obtain at least an Upper Second Class Honours degree in Computing Science or a similar degree in another discipline plus experience in computing may apply.

Further information and application forms can be obtained from Dr S. M. Dean, Department of Computing Science, King's College University of Aberdeen, Old Aberdeen, AB9 8UB. The completed applications along with recommendations from two referees should be submitted by the end of June.

PLYMOUTH POLYTECHNIC

Computer Centre

SYSTEMS PROGRAMMER I.C.L. 1903A/2903 SYSTEMS

Salary: £23,000 - £24,150 p.a. (including superannuation)

To be concerned with developments for the ICL 1903A/2903 installations, including user support, unit development, and testing, and programming advisory service.

Experience in George 2 and Mainframe external and proven experience in Fortran and Basic. A working knowledge of Cobol and/or Plan will be advantageous.

Placement on salary will be consistent with experience and qualifications.

Application forms to be returned by Friday, 26th June, 1978, can be obtained with further particulars from the Personnel Officer, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA.

PERKIN-ELMER DATA SYSTEMS | INTERDATA DIVISION

APPLICATIONS SOFTWARE SPECIALISTS

SALARY TO £7,000

The INTERDATA DIVISION of PERKIN-ELMER DATA SYSTEMS has located a significant part of its software development at its International Headquarters, based in Slough.

At present, the department is 40-strong, and combines a friendly and informal working environment with high professional standards. Our current requirement is for suitably qualified professionals who can demonstrate significant achievement in the commercial software field. The successful candidates will form part of a new group, working in the area of development support, which covers such services as:

- ★ Validation of individual software products.
- ★ Integration of these products into complete systems.
- ★ Maximisation of system performance.
- ★ Documentation of the overall system.
- ★ Continuation software engineering.

THE QUALITIES WE SEEK INCLUDE:

- ★ A minimum of three years' relevant experience in a commercial software product environment, either in a development situation or as a user.
- ★ Practical experience in COBOL and/or RPGII with some knowledge of Assembler.
- ★ Good communication skills.
- ★ A knowledge of database and transaction processing techniques would be an asset.

WE OFFER:

- ★ Salaries up to £7,000 p.a. for the right applicant.
- ★ Relocation expenses where appropriate.
- ★ The usual large company benefits, including pension and health insurance.

If you are interested and would like more information call Bernard Evans, or write to him at the address below, giving your career details.

PERKIN-ELMER DATA SYSTEMS, 227 BATH ROAD, SLOUGH, BERKS, SL1 4AX. TEL. SLOUGH 34511.

A COMPUTER AT THE BOTTOM OF THE GARDEN?

That would be great, wouldn't it? But the next best thing may be one of the jobs listed below:

SYSTEM 4
370/148
SYSTEM 3
DEC

HAYES
HOUNSLOW
CRAWLEY
N.1, S.W.1

Programmers
ASSEMBLER
COBOL

Cambridge, Burton-on-Trent, Horley
Hayes, City, Morden,
Burton-on-Trent, Brecknell, Forest
Gate, Stevenage, Oatthorpe
City, Guildford, Croydon,
Harmondsworth, Chatham
City, Kingston, Cambridge
City, Horley

PL1

RPG II
FORTRAN

Analysts

Cambridge, City, Crawley,
Burton-on-Trent, E.7, Kingston -
All levels

Salesmen

Top jobs for self-motivators

PLEASE RING US FOR THE HOME-GROWN JOB

MARTON associates
FOR COMPUTER PEOPLE AT THE CROSSROADS.

206/210 Bishopsgate,
LONDON EC2M 4NR
01-283 3237

D.P. Opportunities

North of England, Competitive Salaries

Our client, a rapidly expanding subsidiary of a major public group, provides consultancy and bureau services to in-house and external clients with involvement in both I.B.M. and I.C.L. installations. Recent growth and re-structuring has led to the following requirements: **Project Leader - Systems, Senior Systems,**

J.C. Parkin, Ref: 45193/CW

Male or female candidates should telephone in confidence for a Personal History Form to: **MANCHESTER: 061-236 8981, Sun Life House, 3 Charlotte Street, M1 4HB.**



Hoggett Bowers
Executive Selection Consultants

BIRMINGHAM, CARLTON, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE, and SHEFFIELD.

Financial Services
Division

Technical Assistant, AP4

Up to £4,341 per annum, inclusive

This post is primarily concerned with computer programming and systems analysis. In addition a limited amount of computer operation is involved, especially in relation to new applications, and at times outside normal office hours for which overtime is normally payable.

Experience is required in COBOL and preferably also in BASIC, preferably in relation to Honeywell 61/60 equipment.

The post holder must be the Computer Officer and is responsible in his absence for all aspects of the work of the computer section.

Application forms and job details may be obtained from the Manager of Personnel & Management Services Division, Baidford, Carlton, Northgate House, 2 High Pavement, Baidford (Telephone 2881 Ext. 422).

Please quote reference - /F86/CW closing date: 31 MAY 1978.



COMPUTER OPERATOR (DAY SHIFT ONLY)

S. HARROW c.£3500

We are installing a Honeywell 62/50 128k disc/tape computer in July 1978 and we require an experienced operator to join our newly formed Data Processing Department.

Applicants should have a sound knowledge of Level 62 GCOS/JCL and relevant qualifications.

The position will reflect the benefits of working within an expanding company which is part of a multi-national group involved in quarrying, asphalt and ready-mixed concrete.

Contact: Richard White on (01) 864 6811 or write to the Operations Supervisor, Pioneer Concrete (Holding) Ltd., 58-60 Northolt Road, South Harrow, Middlesex.



basildon council

Programmers — Analysts — Project Leaders

To £6,200 **Oxford**
for a team leader required to set up and organise a team of programmers starting a new project the company requires to expand and develop a new area of their business activities. Early advancements are possible for the successful applicant who has a good technical background preferably with a knowledge of PL1. Travel within the UK involved initially, with possibility of travelling in Europe as the department becomes established. The company offers a good future with relocation costs payable in the right circumstances, possibility of company car but subsidised travel and pool cars available from start. Subsidised staff restaurant, free life assurance plus many other benefits. For more details enquire now and quote reference number.

AOC 1108

WE HAVE ON FILE A LARGE NUMBER OF VACANCIES FOR COBOL PROGRAMMERS WITH A MINIMUM OF 1 YRS. EXPERIENCE RANGING FROM JUNIOR TO PROJECT LEADER LEVEL. SALARIES TO £6,000 p.a.

To £7,000 **Beckenham**
for systems analyst with a minimum of 4 years' analyst experience. A knowledge of on-line systems with insurance or banking applications a definite advantage. Modern offices with easy access for commuters. Company benefits include free life assurance cover, up to 3 times annual salary plus a contributory pension scheme. Company at present considering proposal to upgrade current ICL 1902T to 2960 equipment.

AOC 1094

To £6,750 **Southampton**
for a systems analyst with 3 years' systems experience to work for a small data processing bureau nicely situated in a desirable area on the south coast. The person will be required to act as a support advisor to the bureau customers backing up a sales person as well as organise a small team of programmers working on customer systems. The bureau have a Univac 9400 running most types of commercial package applications as well as designing and writing systems to suit individual customer requirements. More details available for this position.

AOC 1101

Gryphon Computer Recruitment
Essex House Cherrydown Basildon Essex
Contact Chris or Olivia on 0268 282155



GRYPHON

To £5,500 **Liverpool**
for analysts with 18 months' systems experience or to £4,800 for programmers with a minimum of 2 years' COBOL programming. A rare chance to develop your career within a professional organisation who place data processing at the heart of the company's development plans. Our client is situated in modern premises in the centre of Liverpool with excellent communications by road or rail for outlying residential areas. To get the best available people this company are offering up to 100% relocation costs, good salaries for situation and generous bonus schemes. For more details of what our client has to offer make enquiries now quoting reference number.

AOC 1087

OPERATIONS
PERSONNEL
ENJOY
REWARDING CONTRACTS
At
TRIDENT
OFFERING
REAL
SECURITY

On both long and short term contracts using all machines and operating systems

For more details contact:

TRIDENT COMPUTER SERVICES LTD

SENTRY HOUSE
110 FRIMLEY ROAD
CAMBERLEY
SURREY
GU24 0JZ



2118 COVENTRY ROAD
SHELDON
BIRMINGHAM
B28 3EA
021-742 4491

Licensed Authority by the D.O.E. as an Employment Agency & Employment Business

COMPUTER APPOINTMENTS

Melbourne — Sydney — Perth

We are anxious to hear from programmers and analysts who are planning to migrate to Australia in the near future.

Job opportunities for experienced and qualified D.P. personnel are abundant in Melbourne and Sydney.

We are a computer service organisation operating in four states and specialising in E.D.P. personnel and on-line services.

We would welcome enquiries from all persons desirous of joining our own company or client organisations.

Salaries range from \$A12,000.00 to \$A20,000.00.

Expertise in Burroughs, medium systems software and large IBM systems (370/158 OS/VSI or MVS)

together with ICL George 2/3 operating systems are of particular interest.

Applications in writing should be forwarded to the address given below together with details of estimated arrival time in Australia and resident status (permanent, working visa etc.).

Contract work on a short term basis (3-6 months) is also available.

A prompt reply regarding your personal prospects of securing the right position is guaranteed. Write in confidence to:

Mr. P. Johnston,
Halifax Management Services Pty. Ltd.



551 King Street,
West Melbourne,
Victoria, 3003,
Australia.

OPERATORS ENGINEERS

If you are interested in fully contact with Computer People - Engineers, Operators, Technicians, etc. - we may have an opportunity for you. £10,000.00 salary and profit sharing scheme to the right people. For more details contact: TRIDENT COMPUTER SERVICES LTD. 2118 Coventry Road, Sheldon, Birmingham B28 3EA. 021-742 4491.

COMPUTERCALL

Our client is an international leader in telecommunications and control systems technology with major export orders and facilities. Real-time Software Engineers, Micro-processors Applications Engineers. South Coast up to £5,500. The opportunity is there in an exciting, fast growing and very generous relocation scheme. Please contact: Dave on 01-499 4501 or John Nolan on 01-584 9288 or write: Finance Executive, 52 Thurloe Place, London, SW7 2QQ. Ref No. FC/L/11. (Agency) Thurloe Executive.

DOS/VS SYSTEMS PROGRAMMER

International Banking — City
£6,500 + Bonus

Mortgage Facility
Free BUPA
Personal Loans
Season Ticket Loan
L.V.s 75p per day

Our client is a leading name amongst foreign banks and their operations include a large London Office. This supports an IBM 370 installation which is undergoing significant developments, including On-Line systems. Running under DOS/VS, they use CICS, Power/VS and require a Systems Programmer to support the IBM software and provide technical assistance to the systems and programming staff. In addition, as a senior technical member of staff, he/she will be involved in the installation of a data base system.

Based in pleasant City offices, the position offers an attractive salary, mortgage facility (after a qualifying period), private medical insurance, loan facilities, season ticket loan, pension/life assurance arrangements, L.V.s and annual bonus.

To discuss this opening telephone TONY BAKER on 01-499 4501.
REF. RW 20/1

REAL-TIME SOFTWARE DEVELOPMENT

Industrial applications of
Real-time Minis — Home Counties

This company is a world leader in real-time process control systems. Increasing sales give rise to the following staff requirements in the Software Development Department.

TEAM LEADER (Interactive Languages)
£7-£9K (+ Reloc)

This is a senior appointment leading a team developing interactive language compilers.

SOFTWARE DESIGNERS £4 - £7K (+ Reloc)

A number of attractive vacancies exist for software designers with various levels of experience in the following areas:

- Micro-processors
- Operating Systems
- Process Control Applications

This is a first-class opportunity to exercise your skills with a growing organisation in a rapidly expanding market.

To find out more, telephone TONY BAKER on 01-499 4501
REF. RW 20/2

DIBOL and FORTRAN MICRO CONTRACTS BUCKS. to £250 p.w.

Two experienced programmers are required to develop systems for micro computers. Both contracts are for a minimum of 2/3 months and are renewable on a monthly basis. The FORTRAN programmer will develop telecommunications applications and the DIBOL person will create package program products for subsequent marketing.

ACT NOW: CALL DAVID J. HUTCHINSON; 01-499 4501
REF. RW 20/3

2900 SYSTEMS SALES

c. £12,000 + Car

★ Total Support Capability ★

A well-established organisation is entering the market for ICL 2900 services, equipped with a fully operational installation and all-up supporting services. The services are sold to existing and planned users of the ICL 2900 range.

A senior experienced DP Marketing Executive is sought to take the service to the market place and secure a viable share of the market in the short-medium term. To do this successfully, you must have demonstrable sales capability and preferably a comprehensive awareness of the 2900 range and its market place.

The income indicator is £12,000, but actual earnings are largely self-determined.

For further information, telephone TONY BAKER on 01-499 4501.

RW 20/4

hutchinson-scoggins recruitment
10 Dover Street London W1X 3PH Telephone 01-499 4501

Systems Programmers

It's easy to find out how much your experience is worth...

...Come and talk informally and we'll tell you!

You're a talented Systems Programmer. You've been in the business for anything from around 12 months to five years and you're looking for a move which will significantly develop your career. So what are you looking for? More money in your present job? A promotion in your present company? Or are you looking for a move which will not only improve your salary but your experience, your degree of involvement in your work and consequently your career prospects?

If that's the case you should seriously consider IDEC. IDEC, the design and development centre of I.T.T. Business Systems and Communications Group is responsible for the major software development activities of the new products marketed by this worldwide group.

We can offer you:

- 'State of the art' Software Developments in:
 - Real Time — Software Engineering
 - Microprocessors — Distributed Processing
 - Compilers — Data Communications

- A relaxed professional work environment on London's Green Belt, (current locations are Cockfosters and Potters Bar).

We are only looking for good software professionals, people dedicated to improving the software development process and expecting to be justly rewarded for it. We recognise potential at all levels and it might surprise you to find out just how much we value your software expertise.

We'd like to tell you more about the opportunities currently existing within IDEC, so why not come along and talk to us over a drink!

If these dates are not convenient, then telephone us on: Potters Bar 44137, or write to: Mr J. Hooley, Personnel Manager, IDEC, Canada Life House, High Street, Potters Bar, Herts.

Come along to find out how much your experience is worth. We will be at:

The Connaught Rooms (Debentures Stafford Suite), Great Queen Street, Holborn, W.C.2, on Monday, May 22nd, between 12 noon and 9.30 pm.

OR
The Halfway House Hotel, (Tulip Suite), 250 Luton Road, Dunstable on Tuesday, May 23rd, between 12 noon and 9.30 pm.

OR
Canada Life House, High Street, Potters Bar, Herts on Wednesday, May 24th, between 12 noon and 9.30 pm.

IDEC

DEC 10 11 44



WE CURRENTLY HAVE VACANCIES FOR COMPUTER OPERATIONAL STAFF, INCLUDING
OPERATORS/DATA CONTROLLERS/PUNCH, VDU&DDE OPERATORS/TRAINEEES

WE SPECIFICALLY REQUIRE
IBM DOS or OS OPERATORS with 9+ months experience
SALARY BETWEEN £3000 - £5000

IF YOU ARE SEEKING A POSITION AND WOULD LIKE TO BE OFFERED SUCH BENEFITS AS
MORTGAGE FACILITIES/LIFE ASSURANCE/PENSION/SUBSIDISED LUNCHES AND EXCELLENT CAREER PATH

CONTACT: AVRIL LIVELY
AJK Recruitment Limited
26 Chilworth Street, London W2 6DT
Telephone 01-402 0933
Employment Agency/Licence No. SE(A) 1462

ICL OPERATORS
FREE BEER & C. £4000
in West London

One of the major UK breweries have recently moved their DP centre to modern purpose-built premises in West London. The current hardware, two ICL 1903T computers running under GEORGE 2S, support several on-line systems. As one would expect from a major brewery conditions of employment are first class and include:

- ★ Start salary of C. £4000 with a review in July 1978
- ★ Excellent restaurant, with subsidised evening meals
- ★ Ample car parking
- ★ First class career opportunities
- ★ Free beer, of course!

Two operators with at least 18 months operating experience on ICL 1900 mainframes are required to complete the existing operations team. Three shifts are worked with 6 personnel per shift and because of the size of the installation opportunities for career progression are excellent.

For further information, including a set of data sheets describing our clients' installation, contact our CROYDON office quoting ref: CW17-8S.

01-886 9893 (24 HOUR ANSWERPHONE) 061 236 2419 FAULKNER HOUSE
19, PARK STREET, CROYDON, CR9 1TN FAULKNER STREET, MANCHESTER, M1 4YD

COMPUTER AND
PROFESSIONAL
PERSONNEL
CONSULTANTS



CAPP ASSOCIATES
LONDON AND MANCHESTER

Computing
Services
Association

BOLTON INSTITUTE OF TECHNOLOGY
ELECTRICAL ENGINEERING DEPARTMENT
MICROPROCESSOR APPLICATIONS

Applications are invited from students holding good Honours Degrees in Electrical Engineering or Computer Science for two SRC CASE Studentships. One vacancy, in collaboration with LIMROSE ELECTRONICS, will investigate the educational application of microprocessors. One vacancy, in collaboration with LUCAS AEROSPACE, will investigate the industrial application of microprocessors. The collaborating firms may be willing to supplement the salary in suitable circumstances. Registration for a Higher Degree is expected. Application forms are available from the Principal, Bolton Institute of Technology, Deane Road, Bolton BL3 6AB to whom completed applications should be returned by 31st May 1978.

TEMPO TIMESHARING LTD.
ARE SEEKING A
MANAGING DIRECTOR

This dynamic young business and software house, in its 4th year of growth and expansion, is seeking a Managing Director to take over the day-to-day running of the company. The successful applicant must have a track record of success in the computer industry and management of a team of professionals but will not necessarily have experience of all the responsibilities the post will entail. Potential to grow with the company is paramount. Salary will be largely governed by profits, and the bonus scheme will remain in operation for at least three years so that the M.D. can make a long term plan without fear of personal, controlling. 1977 targets will give an annual rate of well over £10,000 but the reason for recording such a profit is to achieve even better results in the first instance. Please write to: Dudley Cooke, Chairman, Tempo Timesharing Ltd., 48 Ferry Street, London, W1.

REAL TIME IN CROYDON
Mini- and Micro-based Communications Systems

All salaries above market rate

This Swiss subsidiary, as sound and secure as a Zurich gnom, have asked us to find more Analysts at once and more Programmers pronto

To help us — and you — they're ready to negotiate to £8k, and higher in exceptional cases

And to pay very generous relocation expenses

And to provide ample opportunities for travel abroad. (Yes, you can take your skis)

And to strive to see that your promotion prospects stay as bright as, or brighter than, they would be anywhere else

Which should be easy. They're into all kinds of communications systems, and all in a big way.

Naturally, they'd like you to have communications experience. Or at least to be interested in picking up some—in which case a scientific, message switching process control or flight simulation background would help

And, if that background should include Intel 8085, you're probably certain of top wages

A degree is desirable, anyway. So appropriately qualified graduates with little or no experience may get in at from £4k up

Language: Mini or Micro Assembler.

Sex: either, whatever your level

To apply, simply dial 01-836 9719 or 9882 and ask for Boris McLaren

Jupiter
COMPUTER APPOINTMENTS

(REAL TIME MINI'S PLACE)
Suite 43, 12-13 Henrietta Street
Covent Garden, London WC2

THE PROVIDENT LIFE GROUP opposite Liverpool Street Station

Senior Programmer

to £5,500, plus excellent fringe benefits

Programmers (2)

to £5,000, plus excellent fringe benefits

The Provident Life Association is a medium size Life Assurance Company in the City. Expansion of the Development Section has created the following vacancies in a Company committed to compensation and about to embark upon its first venture into on-line systems.

Senior Programmer

4 years plus of 1900 COBOL. Previous experience of staff supervision would be an advantage

Programmers

Between 18 months and three years of 1900 COBOL

The above positions do not require on-line experience as thorough training will be given. The Company intends using TPS 1900 as its TP monitor and all programming is developed interactively using MAXIMOP.

Company benefits include:

- * Non-Contributory Pension
- * Mortgage Scheme
- * 33-hour Flexitime working week
- * Free lunches or LVs
- * Xmas bonus
- * Season ticket loans

Please write or telephone for application form to:
F. W. LEE — STAFF MANAGER



PROVIDENT LIFE
ASSOCIATION OF LONDON LIMITED
286 Bishopsgate London EC2M 4QP 01-247 3200

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

SENIOR ANALYST/PROGRAMMER

BERKSHIRE

To £6000

We are seeking a SENIOR PROGRAMMER or ANALYST/PROGRAMMER keen to enhance their career by becoming further involved in systems analysis and design.

This position offers the opportunity to gain:

- * Team Leading Responsibility
- * In Depth Knowledge of IMS/COBOL
- * On-Line Real-Time Experience
- * Systems Design and Development Involvement

The successful applicant will have at least three years' commercial systems and programming experience, ideally through not essentially gained in a manufacturing environment. Experience of IBM is not essential, although knowledge of COBOL is necessary. The Company offer relocation assistance, five weeks' holiday and an excellent starting salary.

24-hr. answering service
Please telephone for a confidential
discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 0981

FACTUAL OPPORTUNITIES OF THE CAREER KIND

There's been a lot of interest in science fiction lately but, we think professional men and women like you will be even more interested in the present facts working towards the future.

Segas with one of the most advanced computer set-ups in the country serving 1.5 million customers have 50 development projects of various sizes in hand, and are still expanding to meet the developing needs of the British Gas Industry. These projects include major new systems in the supplies, customer accounting, sales and engineering sectors.

A 1MB 370-145 and a 2MB 370-148 are currently installed, running a wide range of teleprocessing and batch applications under OS-VSE, VM, CICS and VTAM. A 4MB 3032 is on order for delivery this summer to cater for the planned systems growth.

Future plans which include distributed processing, involve the extension of our terminal network to some 600 remote VDU's by 1980 and the introduction of database.

What better reasons for needing your help:

PRINCIPAL SYSTEMS ANALYST
up to £7700 p.a.

A minimum of five years' experience coupled with the ability to develop first-class working relationships with functional departments are basic requirements.

SENIOR SYSTEMS ANALYSTS
up to £6000 p.a.

At least 3 years' systems experience and proven experience of implementing a major project is essential.

SYSTEMS ANALYSTS
up to £4600 p.a.

With a minimum of one year or more experience in a commercial systems environment.

Apart from the obvious work-scope, exceptional promotion prospects and competitive salaries... you can also look forward to generous holidays, flexi-hours, sickness/pension insurance schemes, comprehensive sports/social facilities, excellent working conditions and, if necessary, full comprehensive training. Those are the facts. If you are interested please call Ray Broughton on 01-688 4166 ext 6002 or after 7 p.m. on 01-557 7824. Alternatively write to: Personnel Manager, Segas, Segas House, Katharine Street, Croydon, CR9 1JJ.

SEGAS**THORBAR**

(RECRUITMENT AND CONSULTANCY SERVICES) LIMITED

Greenock House 19 Cuckfield Road Hurstpierpoint Sussex

Telephone 0273 833848

SPECIALISTS IN DP AND EXECUTIVE RECRUITMENT

MIDDLESEX/HERTFORDSHIRE**SYSTEMS ANALYSTS**

COMMENCING SALARY CIRCA £6,250 PER ANNUM

PROGRAMMERS — MINI — COBOL — PL/1

COMMENCING SALARY TO £5,500 PER ANNUM

THIS IS YOUR CHANCE TO DEVELOP YOUR CAREER IN AN ENVIRONMENT OFFERING YOU MAXIMUM OPPORTUNITIES
NEW IBM 370 HARDWARE BEING INSTALLED SHORTLY

These are opportunities for you to join a major U.K. Group who are leaders in the leisure industry and who are now engaged in the development of a variety of commercial and financial systems for the Group, to be based upon IBM Mainframe Hardware.

We require to identify candidates who can portray experience in the following areas and who are dedicated towards progressing their careers in what can be described as a highly dynamic and exciting environment.

SYSTEMS ANALYSTS

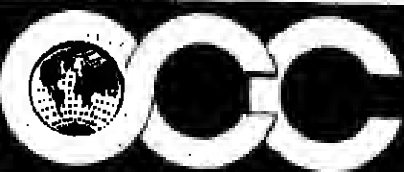
1. The successful candidates for this role are likely to be currently working in a Systems Team engaged in the design of commercially based applications.
2. A Senior Programmer having recently progressed into Systems Analysis work would be considered for this opportunity.
3. Candidates interested in developing their careers in the environment quoted above will find the opportunity very rewarding.

PROGRAMMERS

1. Programmers with experience in Cobol, PL/1 or Assembler languages will prove highly attractive to our clients.
2. You should be interested in establishing a career for yourself within an environment dedicated to career progression for staff members.
3. Experience working with IBM Mainframe or Mini Computer Hardware will be sought.
4. A reasonable level of academic achievement will be expected.

TELEPHONE OR WRITE TO US NOW TO MAKE AN APPOINTMENT FOR INTERVIEW

16 Bedford Row
London WC1R 4EB
01-242 9356
Telex 21120



Specialists since 1971
in UK and international
computer appointments

occ computer personnel limited**TASK/MASTER**

Teleprocessing Systems
Consultancy & Support

to £7500

TASK/MASTER is the world's leading independent TP monitor for IBM mainframes, with over 300 users world-wide. TSI International in London are responsible for supporting their UK customer base, as well as six distributors throughout Europe. They are looking for an additional person to install, support, and advise on TASK/MASTER from their London office, with opportunities for travel in Europe and the U.S.A. This is an ideal chance for a keen and personable IBM Assembler/technician, preferably with a systems programming background and some on-line experience, to add to his/her skills and experience.

TSI International, the UK subsidiary of Turnkey Systems Inc. have recently announced extensions to their product range in the form of KEY/MASTER, their successful date-entry package, now available under CICS, and are diversifying further in the areas of on-line data manipulation and retrieval. Comprehensive training in these products will be given. Company benefits are first-class, including profit-sharing, free life insurance and BUPA membership, car allowance and compensation for work away from home.

To apply for this position, or for further information please contact Sharon Matthews on 01-242 9356, (day) or Bill Harvey (02774) 22357 (evenings) quoting Reference 434/CW

**Italy***** Consultant — Word Processing**

You must be an experienced computer professional with a good understanding of the concepts and applications of word processing equipment, and detailed knowledge of the software of at least one system.

*** Database Consultant**

You should have a strong commercial data processing background with practical knowledge of an operational database installation. You must have a broad understanding of both CODASYL and non CODASYL structures. Knowledge of IMS, librarian, TOTAL and ADABAS would also be useful.

*** Minicomputer Programmer**

If you have a good programming background on any common minicomputer, particularly DEC, Hewlett-Packard or Honeywell, and want to work in Italy, please contact us. Knowledge of Italian will of course be advantageous.

The total salary package will be very attractive to people at the moment working in the United Kingdom.

Interviews will be held in London for appointments from August 1978.

Please write, initially to:
J. A. Taylor, Resources Manager,
SPL International,
12/14 Windmill Street, London W1P 1HF
or telephone 01-636 7833



SPL Italia SpA is a subsidiary of SPL International.
London · Manchester · Nottingham · Bristol · Paris · Brussels
Frankfurt · Milan · Stockholm · Helsinki · Madrid · Utrecht

THORBAR

RECRUITMENT AND CONSULTANCY SERVICES

Greenock House 19 Cuckfield Road Hurstpierpoint Sussex

Telephone 0273 833848

SPECIALISTS IN DP AND EXECUTIVE RECRUITMENT

SURREY/MIDDLESEX**TECHNICAL SUPPORT CONSULTANTS**

Commencing Salary circa £7,500 per annum

OUTSTANDING OPPORTUNITIES FOR SENIOR ANALYSTS/PROJECT LEADERS TO DEVELOP INTO A HIGH LEVEL OF RESPONSIBILITY

We wish to identify two outstanding candidates able to demonstrate their ability to work with a major mainframe U.K. Sales Force in providing them with a professional Sales Support facility.

In order to qualify for one of these opportunities you will be expected to portray the following level of experience:

1. Good all round business systems experience derived from working with user management in the solution of business problems.
2. Experience working with small to medium sized computer hardware desirable.
3. You must be personable and able to communicate with all levels of user management.
4. Your experience will ideally include a programming background having progressed through to Systems Analysis and on to a Project Leadership role.

THESE ARE OUTSTANDING OPPORTUNITIES AND WE THEREFORE SUGGEST THAT YOU COMMUNICATE WITH US IMMEDIATELY BY TELEPHONE OR IN WRITING IN ORDER FOR US TO ARRANGE FOR YOU TO ATTEND IMMEDIATE INTERVIEWS

GO FOR GOLD

Selling Texas Mini-Computers and Data Terminals

This is your chance to join one of the trendsetters of the mini-computer market. Our products are in the forefront of computer technology and are taking the commercial, industrial and OEM markets by storm. We are a really international organisation and are backed by the security and research capability of a billion dollar corporation. Our market penetration is growing rapidly providing career prospects for ambitious, self-motivated individuals that you'd find hard to beat. We are looking for

Mini-Computer Sales Engineers

BASED SLOUGH AND BEDFORD base salary c £6500 on quota earnings c £10,000 + 2 litre car + profit sharing to sell computer systems in the £5000-£250,000 range. You will be managing existing accounts and developing new business in this rapidly changing market place. Our range includes many state of the art products for a wide variety of applications. Excellent technical support is available. You must have related sales, marketing or applications experience - the ideal would be a professional salesman with a proven track record in mini-computer sales. Ref. No. FY/307/1.



2
TEXAS INSTRUMENTS LIMITED
3

Data Terminal Sales Engineers

BASED SLOUGH AND BEDFORD base salary c £6500 on quota earnings c £9000 2 litre car + profit sharing to manage existing accounts and develop new business opportunities for our family of intelligent and non-intelligent devices, incorporating the most recent advances in innovative technology. A record of success in sales, marketing or applications in this fast growing sector of the market is essential. Ref. No. FY/307/2

Candidates for these positions, men or women, ideally aged 25 to 40, should be educated to HNC or degree level. Ideally, you should live within a 50 mile radius of Slough or Bedford.

Excellent conditions of employment include profit sharing, free private hospital plan and generous assistance with re-location expenses, where appropriate.

Please write or telephone for an application form to Ann Stevens, Personnel Department, Texas Instruments Limited, Manton Lane, Bedford. Tel: Bedford 67466 Ext. 3442

Analysts and Programmers

Spend 12-18 months in the U.S.A. and return to a career position in the U.K.

All third generation hardware backgrounds considered. Openings at all levels. Gain IBM 370 training and experience on an exciting one/two year visit to America. Join INFORMATICS INC, a prestigious world-wide consulting company. Initial assignments will be in the United States as part of our programme of Orientation, Training and On-the-job experience. To develop your technical and management skills for your return to our British office. We have recently opened a London office and have plans to expand throughout Europe. Excellent salaries and generous relocation allowance including fully paid return fare. Expense Paid Interviews: Dublin May 22, Glasgow May 23, Manchester May 24. To arrange a confidential local interview in Dublin, Glasgow or Manchester, send resume immediately or phone Miss Angela Hannell at our London office, beginning Thursday May 18th (reverse charges accepted).

Informatics Inc

110-111 Strand,
London WC2R 0AA
01-240 8788

Ministry of Defence

ADP SYSTEMS ANALYST

Dorset

This post is at the School of Signals, Blandford, Dorset. The successful candidate will work on computer aided assignment of radio frequencies. This will involve assigning frequencies to army units in the field, as well as continuous updating and improvement of the system and development of new systems for frequency assignment and electromagnetic compatibility analysis.

Candidates, normally aged under 30, must have a degree/HND/HNC or equivalent in an appropriate subject and experience in systems analysis and of programming in FORTRAN and CORAL. A knowledge of radio communications and army signals equipment would be advantageous.

Appointment will be as a Higher Scientific Officer (C3740-C4075; under review). Starting salary according to age, qualifications and experience. Non-contributory pension scheme.

For further details and an application form to be returned by 12 June, 1978, write to:
Ministry of Defence, CM(S) 153,
Room 310, Savoy Hill,
House, Strand,
London WC2R 0BX.

Please quote Ref: SA/1/1/1.

MICRO PROCESSORS & MINI COMPUTERS

London & Midlands

ANALYST/PROGRAMMERS

with at least three years' programming experience in high level languages, to work on interesting commercial applications. We offer challenging and rewarding prospects with an expanding company in the rapidly developing market for Micro Mini-systems.

Apply in writing to:

P. R. Daly & Co. Ltd., Butts Mead, High Road, Eastcote, Pinner, Middx. 01-868 7284.

Senior Systems Analyst

Croydon

Package C. £7,500

The company for which we are recruiting is well known in the insurance world, with an established DP department with a still developing application base.

A requirement now exists for a person to become involved in a number of feasibility studies. The tasks will require a friendly, outgoing personality sympathetic to the problems of users but capable of defining requirements independently.

Technically we expect a minimum of 4 years in systems analysis, with programming background. You will have implemented at least one project successfully, within time and budget constraints.

In addition to feasibility studies you will also undertake business system design, system and program specification and project implementation. This is an interesting opportunity for the right person. To further your application please telephone or write to our CROYDON office. Ref. CV/15/8H.

01-240 8788
CAPS ASSOCIATES

occ computer personnel limited

Computers play a vital part in the continued growth of this client, which is a highly successful retailing organisation. The organisation attributes part of its success to its highly developed computer systems and further investment in hardware and software has led to the need for additional SYSTEMS ANALYSTS and PROGRAMMERS. Some key points about the environment are:

Technical

- ★ Mainframes & Minis
- ★ Extensive network
- ★ Database
- ★ Distributed processing

Systems

- ★ On-line order processing
- ★ Point of sale
- ★ Distribution
- ★ Finance and accounting

Career

- ★ Continued growth means good prospects
- ★ Excellent in-house training facilities
- ★ Regular appraisals and reviews

Benefits

- ★ Bonus scheme
- ★ Discount purchase scheme
- ★ Excellent relocation package

Location

- ★ Close to coast and country
- ★ Good communications
- ★ Low cost housing

The Systems Development department is organised into a number of sections, on a project team basis, each concerned with one of the organisation's main activities. Some of the current vacancies are outlined below.

Project Programmers

IBM Assembler experience

to £5,500

Point-of-Sale Applications

A Management decision has been taken for a Point-of-Sale system to be developed and subsequently to be implemented at the company's extensive retail outlets. This is a far-reaching application and is designed to capture all movements of goods within the company's stores. The application has immense potential for growth because it is eventually proposed to link, by a communications network, all stores to the central data centre. A pilot scheme is currently running using IBM equipment and the scope of the project offers very exciting prospects to the programmers joining the team. The essential requirement is a good knowledge of IBM Assembler in either an OS or DOS environment. Over three years' experience is needed for senior programmer positions, but other good quality candidates with less experience could be considered for less senior positions. Ref. 238/1

Senior Systems Analyst

Pensions administration system

to £5,500

Major systems for completion APRIL 1979

A pensions administration system is being developed urgently to be implemented by April 1979 to meet the requirements of the Department of Health and Social Security. The system is being built around a pensions package supplied by a specialist consultant but a lot of basic investigative work needs to be done to establish how the package will link with the company's other personnel systems. It is a major and advanced system with wide ramifications throughout the organisation. A senior systems analyst is required urgently to carry out this project. Candidates should have 4 to 5 years' systems experience, and whilst pensions experience would be advantageous, experience in the general commercial area would be quite acceptable. Ref. 238/4

BACKGROUND NOTES on the company and job specifications for the vacancies are available to suitable candidates.

If these opportunities sound interesting, please telephone or write quoting reference: 238/CW. Please address your enquiry to me, Neville John on 01-242 9356 (day) or Farnborough (Kent) 52017 (evenings and weekends). Initial interviews will be held in London for candidates living in the South or directly with the client in Liverpool for those living in the North.

Project Leaders

Distribution Systems

to £6,250

Retail and distribution experience needed
Extensive systems developments planned
Scope for creative thinking

Extensive developments are planned for the company's distribution systems, where computer systems have not yet been widely developed. It is intended to look for data processing solutions to problems associated with the current extensive manual systems requiring high staff levels in the distribution centres. The new systems have, however, still to be defined based on business decisions, thereby providing much scope for original analysis of the situation and subsequently for creative thinking to arrive at solutions. Up to two Project Leaders are required to lead teams in this area. Candidates will need 5 years' plus DP experience of which 2 or 3 years must have been on the retail/distribution systems. Candidates must be capable of assuming responsibility for small to medium sized project teams of analysts and programmers. Ref. 238/2

Senior Systems Analysts

Merchandising Systems

to £5,500

Extensive development programme to 1980 and beyond

The organisation has far-reaching plans to entirely redevelop its existing systems in this field to take account of new requirements and to take advantage of the benefits available from the new hardware and software. A common data base is to be set up to integrate stock and financial data. Some aspects of the new systems are: forecasting based on orders placed; on-line data entry of goods received; improvement of supplier payment systems; improved stock control. Three senior systems analysts are now required to join project teams working in these areas. Four to five years' DP experience is needed with at least three years' analysis and design experience. Candidates should be mature and self-confident with a stable background and a solid record of achievement. They should have the potential for early promotion to Project Leader. Ref. 238/5

Systems Analysts

On-line transaction processing

to £5,000

Exciting projects for systems analysts with 2 to 3 years' experience

These vacancies are in the section responsible for developing systems to cope with the very high volume of orders which have to be processed daily - up to 1/2 million transactions. The systems currently running accept input from an extensive national network of 600 VDUs, and these systems are to be extended to cover other aspects of the company's activities. Amongst other systems to be developed, a control stock database is to be set up to improve inventory control. Systems developed for this on-line environment must satisfy stringent tests of technical efficiency as well as serving the needs of the users. Successful candidates are likely to be graduates around 25 with 2 or 3 years' systems experience. The type of application and hardware is not important. Ref. 238/3

Senior Programmers

Cobol development projects

to £5,000

3 years + COBOL on ANY hardware needed

The company's merchandising systems, which have been running for a number of years, are being completely redeveloped to take account of new requirements and to take advantage of the enhanced facilities offered by the new hardware and software. A particular aspect of the redevelopment project is the setting up of a common database to integrate stock and financial data. The systems being developed include on-line and batch systems. Four Senior Programmers are now required to strengthen the various project teams working in this area. The posts offer responsibility, variety and an interesting technical challenge resulting from the size of the hardware and the large volumes of transactions. Excellent training is provided at the organisation's extensive training facilities and promotion prospects are excellent. The main requirements are 3 years' + COBOL experience gained on ANY hardware. Full conversion training will be given as necessary. Ref. 238/6

Please send me further details of job ref. and an application form.

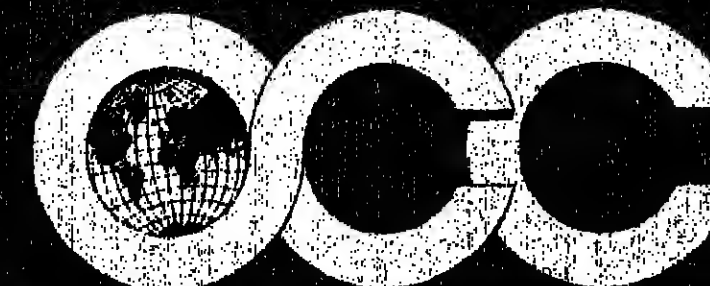
Name

Address

Tel. Home

Work

6 Bedford Row
WC1R 4EB
01-242 9356
Telex 21120



Specialists since 1971
in UK and international
computer appointments

To 67K SCIENTIFIC PROGRAMMER
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.
For this position, a person with a degree in science or engineering, with experience in FORTRAN or ASSEMBLY, is required.

COMPUTECH 01-794 0202

GO FOR GOLD

Selling Texas Mini-Computers and Data Terminals

This is your chance to join one of the trendsetters of the mini-computer market. Our products are in the forefront of computer technology and are taking the commercial, industrial and OEM markets by storm. We are a really international organisation and are backed by the security and research capability of a billion dollar corporation. Our market penetration is growing rapidly providing career prospects for ambitious, self-motivated individuals that you'd find hard to beat. We are looking for

Mini-Computer Sales Engineers

BASED SLOUGH AND BEDFORD base salary c£6500 on quota earnings c£10,000 + 2 litre car + profit sharing to sell computer systems in the £5000-£250,000 range. You will be managing existing accounts and developing new business in this rapidly changing market place. Our range includes many state of the art products for a wide variety of applications. Excellent technical support is available. You must have related sales, marketing or applications experience - the ideal would be a professional salesman with a proven track record in mini-computer sales. Ref. No. FY307/1.



1
2
3
TEXAS INSTRUMENTS LIMITED

Data Terminal Sales Engineers

BASED SLOUGH AND BEDFORD base salary c£6500 on quota earnings c£9000 2 litre car + profit sharing to manage existing accounts and develop new business opportunities for our family of intelligent and non-intelligent devices, incorporating the most recent advances in innovative technology. A record of success in sales, marketing or applications in this fast growing sector of the market is essential. Ref. No. FY307/2.

Candidates for these positions, men or women, ideally aged 25 to 40, should be educated to HNC or degree level. Ideally, you should live within a 50 mile radius of Slough or Bedford.

Excellent conditions of employment include profit sharing, free private hospital plan and generous assistance with relocation expenses, where appropriate. Please write or telephone for an application form to Ann Stevens, Personnel Department, Texas Instruments Limited, Manor Lane, Bedford. Tel: Bedford 6/466 Ext. 3442.

Analysts and Programmers Spend 12-18 months in the U.S.A. and return to a career position in the U.K.

All third generation hardware backgrounds considered. Openings at all levels. 3 to 18 months training and experience on an exciting one/two year visit to America. Join INFORMATICS INC., a prestigious world-wide consulting company. Initial assignments will be in the United States aspect of our programs of Orientation, Training and On-the-job experience, to develop your technical and management skills for your return to our British operation. We have recently opened a London office and have plans to expand throughout Europe, thus affording you an excellent career opportunity upon your return. Excellent salaries and a generous relocation allowance including fully paid return fare. Six months paid interview in Dublin, Glasgow May 23, Manchester May 24, London May 25. To arrange a confidential local interview in Dublin, Glasgow or Manchester, send resume immediately or phone Miss Angela Hannell our London office, beginning Thursday May 18th (resumes otherwise accepted).

Informatics Inc

110-111 Strand,
London WC2R 0BB
01-2405796

Ministry of Defence ADP SYSTEMS ANALYST Dorset

This post is at the School of Signals, Blandford, Dorset. The successful candidate will work on computer aided assignment of radio frequencies. This will involve assigning frequencies to army units in the field, as well as continuous updating and improvement of the system and development of new systems for frequency assignment and electronic compatibility analysis.

Candidates, normally aged under 30, must have a degree in HND/HNC or equivalent in an appropriate subject and experience in systems analysis and programming in FORTRAN and CORAL. A knowledge of radio communications and army signals equipment would be advantageous.

Appointment will be as a Higher Scientific Officer (E3740-E4975; under review) Starting salary according to age, qualifications and experience. Non-contributory pension scheme.

For further details and an application form (to be returned by 12 June, 1978) write to Ministry of Defence, CM(S) 163, Room 310, Sevoy Hill House, Strand, London WC2R 0BX. Please quote Ref: SA/1/EW.

MICRO PROCESSORS & MINI COMPUTERS London & Midlands ANALYST/PROGRAMMERS

with at least three years' programming experience in high level languages, to work on interesting commercial applications. We offer challenging and rewarding projects with an expanding company in the rapidly developing market for Micro and Mini-systems.

Apply in writing to: P. R. Daly & Co. Ltd., Butts Mead, High Road, Eastleigh, Pinner, Middx. 01-868 7284.

Senior Systems Analyst

Croydon Package C. £7,500

The company for which we are recruiting is well known in the life assurance world, with an established DP department and a strong developing application base.

A requirement now exists for a person to be involved in a number of feasibility studies. The tasks will require a friendly, outgoing person sympathetic to the problems of users but capable of defining requirements independently.

Technically we expect a minimum of 4 years in systems analysis with programming background. You will have implemented at least one project successfully, within time and budget constraints.

In addition to feasibility studies you will also undertake business system design, system and program specification and project implementation. This is an interesting opportunity for the right person. To further your application please telephone or write to our CROYDON office. Ref: CW 15 84.

01-236 2361 (10 lines) 01-236 2362 (10 lines) 01-236 2363 (10 lines) 01-236 2364 (10 lines) 01-236 2365 (10 lines) 01-236 2366 (10 lines) 01-236 2367 (10 lines) 01-236 2368 (10 lines) 01-236 2369 (10 lines) 01-236 2370 (10 lines)

occ computer personnel limited

Computers play a vital part in the continued growth of this client, which is a highly successful retailing organisation. The organisation attributes part of its success to its highly developed computer systems and further investment in hardware and software has led to the need for additional SYSTEMS ANALYSTS and PROGRAMMERS. Some key points about the environment are:

Technical

- ★ Mainframes & Minis
- ★ Extensive network
- ★ Database
- ★ Distributed processing

Systems

- ★ On-line order processing
- ★ Point of sale
- ★ Distribution
- ★ Finance and accounting

Career

- ★ Continued growth means good prospects
- ★ Excellent in-house training facilities
- ★ Regular appraisals and reviews

Benefits

- ★ Bonus scheme
- ★ Discount purchase scheme
- ★ Excellent relocation package

Location

- ★ Close to coast and country
- ★ Good communications
- ★ Low cost housing

The Systems Development department is organised into a number of sections, on a project team basis, each concerned with one of the organisation's main activities. Some of the current vacancies are outlined below.

Project Programmers

IBM Assembler experience

to £5,500

Point-of-Sale Applications

A Management decision has been taken for a Point-of-Sale system to be developed and subsequently to be implemented at the company's extensive retail outlets. This is a far-reaching application and is designed to capture all movements of goods within the company's stores. The application has immense potential for growth because it is eventually proposed to link, by a communications network, all stores to the central data centre. A pilot scheme is currently running using IBM equipment and the scope of the project offers very exciting prospects to the programmers joining the team. The essential requirement is a good knowledge of IBM Assembler in either an OS or DOS environment. Over three years' experience is needed for senior programmer positions, but other good quality candidates with less experience could be considered for less senior positions. Ref. 238/1

Senior Systems Analyst

Pensions administration system

to £5,500

Major systems for completion APRIL 1979

A pensions administration system is being developed urgently to be implemented by April 1979 to meet the requirements of the Department of Health and Social Security. The system is being built around a pensions package supplied by a specialist consultant but a lot of basic investigative work needs to be done to establish how the package will link with the company's other personnel systems. It is a major and advanced system with wide ramifications throughout the organisation. A senior system analyst is required urgently to carry out this project. Candidates should have 4 to 5 years' systems experience, and whilst pensions experience would be advantageous, experience in the general commercial area would be quite acceptable. Ref. 238/4

BACKGROUND NOTES on the company and job specifications for the vacancies are available to suitable candidates.

If these opportunities sound interesting, please telephone or write quoting reference: 238/CW. Please address your enquiry to me, Neville John on 01-242 9356 (day) or Farnborough (Kent) 52017 (evenings and weekends). Initial interviews will be held in London for candidates living in the South or directly with the client in Liverpool for those living in the North.

Project Leaders

Distribution Systems

to £6,250

Retail and distribution experience needed
Extensive systems developments planned
Scope for creative thinking

Extensive developments are planned for the company's distribution systems, where computer systems have not yet been widely developed. It is intended to look for data processing solutions to problems associated with the current extensive manual systems requiring high staff levels in the distribution centres. The new systems have, however, still to be defined based on business decisions, thereby providing much scope for original analysis of the situation and subsequently for creative thinking to arrive at solutions. Up to two Project Leaders are required to lead teams in this area. Candidates will need 5 years' plus DP experience of which 2 or 3 years must have been on the retail/distribution systems. Candidates must be capable of assuming responsibility for small to medium sized project teams of analysts and programmers. Ref. 238/2

Senior Systems Analysts

Merchandising Systems

to £5,500

Extensive development programme to 1980 and beyond

The organisation has far-reaching plans to entirely redevelop its existing systems in this field to take account of new requirements and to take advantage of the benefits available from the new hardware and software. A common data base is to be set up to integrate stock and financial data. Some aspects of the new systems are: forecasting based on orders placed; on-line data entry of goods received; improvement of supplier payment systems; improved stock control. Three senior systems analysts are now required to join project teams working in these areas. Four to five years' DP experience is needed with at least three years' analysis and design experience. Candidates should be mature and self-confident with a stable background and a solid record of achievement. They should have the potential for early promotion to Project Leader. Ref. 238/5

Systems Analysts

On-line transaction processing

to £5,000

Exciting projects for systems analysts with 2 to 3 years' experience

These vacancies are in the section responsible for developing systems to cope with the very high volume of orders which have to be processed daily - up to 1/2 million transactions. The systems currently running accept input from an extensive national network of 600 VDUs, and these systems are to be extended to cover other aspects of the company's activities. Amongst other systems to be developed, a control stock database is to be set up to improve inventory control. Systems developed for this on-line environment must satisfy stringent tests of technical efficiency as well as serving the needs of the users. Successful candidates are likely to be graduates around 25 with 2 or 3 years' systems experience. The type of application and hardware is not important. Ref. 238/3

Senior Programmers

Cobol development projects

to £5,000

3 years + COBOL on ANY hardware needed

The company's merchandising systems, which have been running for a number of years, are being completely redeveloped to take account of new requirements and to take advantage of the enhanced facilities offered by the new hardware and software. A particular aspect of the redevelopment project is the setting up of a common database to integrate stock and financial data. The systems being developed include on-line and batch systems. Four Senior Programmers are now required to strengthen the various project teams working in this area. The posts offer responsibility, variety and an interesting technical challenge resulting from the size of the hardware and the large volume of transactions. Excellent training is provided at the organisation's extensive training facilities and promotion prospects are excellent. The main requirements are 3 years' + COBOL experience gained on ANY hardware. Full conversion training will be given as necessary. Ref. 238/6

Please send me further details of job ref. and an application form.

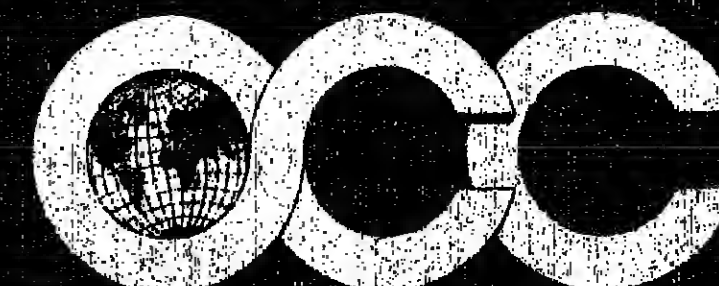
Name

Address

Tel. Home

Work

6 Bedford Row
N W1C 1EB
01-242 9356
Telex 21120



Specialists since 1971
in UK and international
computer appointments

COMPUTER SYSTEMS & PERSONNEL
100 Finchley Road, London, NW10 7TA
01-794 0202

occ computer personnel limited

Write J.H. for new IBM
installation at Uxbridge

JCL Writers to £5,500 plus £600 allowances

These unique opportunities offer:

- * Involvement in establishing the new section
- * Participation in standards development
- * Stimulating environment
- * Troubleshooting role
- * Excellent career prospects

Our client is a major force in the food, entertainment and leisure industries with annual sales exceeding £1,600 m. Data processing for the group is provided by a large internal bureau being equipped with powerful IBM hardware. The bureau provides development, production and support functions to group companies.

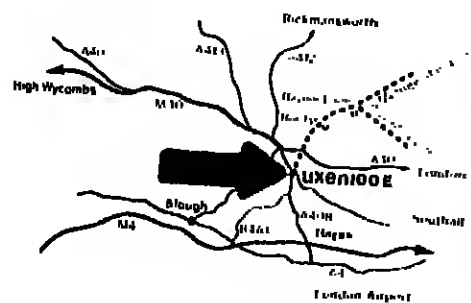
A new JCL section is being established to carry out the following functions:

- writing all JCL for systems being transferred to the IBM hardware, and for newly developed systems
- participating in systems acceptance trials
- controlling all space planning for production running
- carrying out immediate repairs to production systems that fail

GENEROUS RELOCATION ALLOWANCES ARE PAID

If these openings sound interesting, please ring me, Marian Tabana, on 01-242 9355 (day) or 01-555 5555 (evenings and weekends) NOW to arrange a meeting or to discuss these positions further. We can arrange a meeting directly with our client at the Data Centre if this would be more convenient.

COMPREHENSIVE BACKGROUND NOTES are available to suitable candidates.



The team provides round the clock coverage requiring each team member to be on standby at certain times each month. For this an allowance of £600 p.a. is paid in those on standby. A radio paging system operates up to 40 miles from the Data Centre.

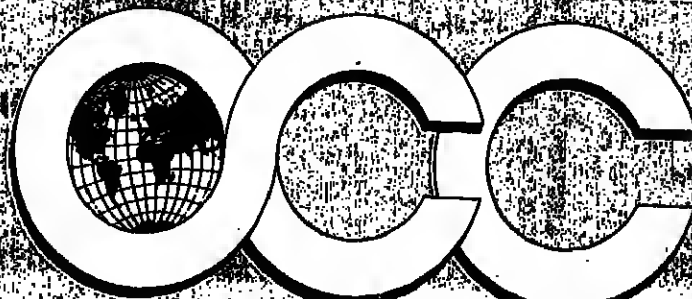
Up to four JCL writers are now required. Ideal experience would be at least 3 years' JCL writing in an OS/VS1 environment. Alternatively, experience under DOS, or shorter OS experience could be acceptable for less senior positions. Candidates need above all the ability to learn quickly and to make a positive contribution to the team.

I am interested in the JCL writer vacancies

Name

Address

Tel. Home Work



Specialist in IBM JCL
in UK and overseas

Analyst c £6,500

As a consequence of the need to develop and design new teleprocessing and data base systems, Project Teams are being set up and we require a small number of experienced analysts to strengthen them. Each of these teams combines both analysts and programmers working together to produce commercial systems for various parts of the company.

We have recently acquired a new configuration comprising of an IBM 370/145 and 370/148 using IMS for DB and VM/370-CMS as the timesharing system for on-line development. Aspects of IPT have been adopted as part of the standards to be used and project planning is carried out using the on-line package spec.

Applicants should have at least 3/4 years' experience in analysis using IBM/370 equipment and preferably within a commercial environment. Experience in any of the software mentioned would be an advantage but comprehensive training would be given where necessary. As all systems are designed and developed in close collaboration with user departments, it is essential that the successful applicants can work with, guide and motivate all levels of user management. Prospects for career development within the Computer Division and other functions of the company are excellent.

The Wellcome Foundation Limited is a major British-owned, international pharmaceutical company providing very attractive conditions of employment which include generous assistance with relocation expenses where appropriate, extensive sports and social facilities and flexible hours.

For more information and an application form, please telephone or write: quoting ref. PY/733 to K. Grieve, Personnel Office, The Wellcome Foundation Limited, Temple Hill, Bedford, Kent, Tel. Bedford 323488, Ext. 2758.

Business Systems Manager

based at High Wycombe

To continue development of the Company's business and accounting systems served by the Group's ICL 2904 computer in conjunction with the ICL 2902 terminals at the main plant depot. The Business Systems Manager would work closely with the Group's Computing Department whilst being directly responsible to Lovell Plant Hire management.

Applicants (male or female) should have had a good grounding in general business systems plus relevant data processing experience. Knowledge of the Construction Industry and past involvement with hiring operations would be distinct advantages.

Lovell Construction is a medium size, publicly quoted Group for the industry with a rapidly growing Plant Hire activity. Accordingly, there are opportunities for further career development for the right person.

We will be offering a realistic salary, plus attractive fringe benefits.

Please apply in writing giving brief career history to:

The Personnel & Training Officer,
Lovell Plant Hire,
Holford Road,
High Wycombe,
Bucks.

or telephone Mr. P. Lonsdale on High Wycombe (0494) 21481 for further details and application form.

Lovell Plant Hire

INTERNATIONAL AND MERCHANT BANKING SYSTEMS-MARKETING.

If you have specialist knowledge of International Banking Systems - including experience gained as a Systems Analyst - your qualifications could provide the foundation of a career in marketing with Burroughs - an Industry Leader in Computers and Banking Systems.

Your responsibilities would be the Marketing, Development and Implementation of Application Software Systems in the International Banking Market.

Success would quickly enable your remuneration to reach five figures and open up a whole new range of career opportunities.

To arrange an initial discussion, telephone or write to: Mr. Jim Hall, Branch Manager, Burroughs Machines Ltd., International and Merchant Bank, Branch, 85 Queen Victoria Street, London EC4V 4EY Or Telephone: 01-548 2651.

Burroughs

QUEEN MARY COLLEGE University of London

COMPUTER CENTRE

The College takes delivery in June of a large ICL 2980 as part of its University of London Computing Service. In summer 1979 the ICL Distributed Array Processor will be installed to provide a national service. To help implement these systems and provide services to users the Centre requires graduates with relevant programming experience to work in the areas of User Conversion, Statistical Databases and Communications Systems. Salary in range £2954-£3925 p.a. (including London Allowance).

In addition Computer Operators are required, preferably with large 1900 or 2900 experience, and a Communications Assistant to take charge of the communications and terminal equipment. Salary ranges £2102-£2581 p.a. (including London Allowance) plus £482 Shift Allowance. Compensation Assesment £2933-£3311 p.a. (including London Allowance).

Application forms available from The Registrar, Queen Mary College, Mile End Road, London E4 6PL, to be returned by 5 June.

SOFTWARE ENGINEERS

MANCHESTER

TO £6000

The Industrial Systems Division of GEMINI is an acknowledged leader in the field of real-time control applications utilising mini and micro computer systems. The division, as an integral part of CAP - Gemini - Sogeti, one of the World's largest software organisations, is well placed to offer its wide range of services to an ever-expanding market.

As demands for our services continue to increase, we require more professional staff with knowledge of such topics as process control, communications, military and diagnostic software, familiarity with an assembly language, CORAL, RTL/2, FORTRAN or BASIC would be useful although experience of general computing applications is essential.

GEMINI offers generous profit sharing, life and permanent health insurance schemes, a minimum of four weeks' annual holiday, plus travel and subsistence expenses while working on client's sites both in the UK and Europe. Relocation assistance will be offered where appropriate.

Applicants should call Ray Weston or Ken Blackmore on 081-941 1922 or write to:



GEMINI COMPUTER SYSTEMS LIMITED
INDUSTRIAL SYSTEMS DIVISION
ROBERTS HOUSE
80 MANCHESTER ROAD
ALTRINCHAM WA14 4PL

MEMBER OF THE CAP-Gemini-SOGITI GROUP

CITY OF LONDON POLYTECHNIC COMPUTER SERVICE

ADMINISTRATIVE PROGRAMMER

The City of London Computer Service provides educational computing facilities for Polytechnic staff and students, a computing service for ILEA schools and colleges and a data processing service for the Polytechnic's administrative departments. The configuration includes a 120k main store, 180 peripheral channels and a range of peripherals. A PDP-11/34 with 8 on-line terminals is dedicated to administrative applications. It has recently been installed.

The Administrative Programmer will be primarily responsible for development, implementation and support of administrative data processing applications within the Polytechnic. Familiarity with both machine and several programming languages will be essential. It is required that the majority of work will be in DBOL on the 11/34. Experience on a specific machine is not required. Applicants will be assessed primarily on their ability to make an individual contribution.

Salary within the range £3,758-£4,286 per annum (under review) - starting point depending on experience and qualifications. Generous leave and good superannuation fund.

For further details and application forms, please write to the Assistant Secretary, City of London Polytechnic, Administrative Headquarters, 117-119, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

CONTRACT PROGRAMMERS

Hewlett Packard 2000 with RTE.

Compex (0234) 711717

Too Busy Earning your Living to make any money?

Additional Partner for Recruitment Consultancy

Most of us fantasise about owning our own business and being our own boss but are too busy earning a living to achieve this ambition. Meeting this rewarding yet demanding challenge calls for special qualities: Ambition, drive, and good humour are indispensable but if the prime motivating force for coming to work is to preserve your pension, then you are simply not for us. Ideally you will have several years D.P. experience possibly with a marketing background or have experience

at the Sharp-end of D.P. recruitment-consultancy. We expect to be able to shatter your dreams of Monday afternoon golf and home with the kids at Five. But your Bank Manager will be delighted by your turn of fortune - we'll talk about that at length when we meet. This rapidly expanding group has no employees, only partners able to shoulder responsibility and cope with success by reaching for extended horizons. If you're one of us call us today.

01-491 4636

(Reverse Charges)

Avon House,
366 Oxford St.,
London. W1N 9HA



PROGRAMMER/ANALYST

Required for IBM installation

in North London. Minimum 1 1/2 years programming experience. Knowledge of Analysis, DOS, and TP an advantage, but not essential. Highly competitive salary plus good company benefits.

Telephone: 01-287 5023

Mr. Haydon

IMPERIAL COLLEGE Department of Computing and Control

SENIOR COMPUTER OPERATORS (2)

Starting salary within the range £3273-£3086 plus shift allowance. Applicants should have had at least 2 years' experience as qualified operators.

TRAINEE COMPUTER OPERATOR

Starting salary within the range £2178-£2188 plus shift allowance. Applicants should be of good education and at least 17 years of age.

We operate an IBM 370/135 running under VM/370 to provide batch and terminal access to a number of computing services. In the future, we will be expanding our services to include the provision of a wide range of services to the University of London.

Two shift system: 07.30-21.15 Monday to Friday, 1.00-5.00 Saturday. Please write giving details to: Mrs. L. M. Moore, Imperial College, Department of Computing and Control, 180 Queen's Gate, London, S.W.7.

Computer Scientist NEUTRON BEAM RESEARCH RUTHERFORD LABORATORY South Oxon.

The Neutron Beam Research Unit at the Rutherford Laboratory, provides support for university research in the fields of physics, chemistry, biology and materials science. The facilities include the reactors and electron linac at Harwell and the high flux reactor at the Institut Laue-Langevin Grenoble.

An intense pulsed neutron source is now under construction at the Rutherford Laboratory and is expected to be operational by 1982/83. This is an exciting development which will provide a neutron source of world significance. NBRU staff have a major role to play in all aspects of preparation for its exploitation, and work on the instruments has already started including design of the computer systems (hardware and software) which will form an important feature of the overall scheme for experiment control, data acquisition and assessment. Computer simulation techniques are also being used to aid the instrument design.

A computer scientist is required to participate in this work. Applications are invited from those with a good degree or equivalent qualification in a relevant subject. Applicants expecting to qualify in this academic year will be considered.

Appointment will be made to a permanent position at the level of Scientific Officer.

Salary will depend on age and experience but will be within the range of £2743-£4218 (including supplement). The salaries are currently under review.

Contact: Ruth Jones of the Personnel Group quoting reference VN 709. Closing date for applications 5th June 1978.

RUTHERFORD Science Research Council
Rutherford Laboratory, Chilton, Didcot, Oxfordshire OX11 0QX. Tel Abingdon 21900

XOREN

Silton House (East Wing)
54/58 Uxbridge Road
Ealing, London, W8 2TL
Tel: 01-587 1725

REAL TIME MINI SOFTWARE SPECIALISTS

£5,000-£9,000

Xoren is a young, independent software house specialising in systems design and programming of real time minicomputer and microprocessor systems.

Established in 1974, the Company has experience of working on projects in the following areas:

- BASIC SOFTWARE: Operating Systems, Compilers, Linkers, Debuggers, Editors, Mailboxes, Switching, Telephone Systems, Data Collection, Concentrators, Terminal Emulators.
- COMMUNICATIONS: Pipeline Control, Alarm Monitoring, Outstation Simulation, Materials Testing.
- PROCESS CONTROL AND TELEMETRY: The Company possesses its own in-house PDP 11 computer which it uses for program development and has expertise on most of the major makes of minicomputers and microprocessors. Currently the Company is working on projects for clients in North America and the UK.

Applicants should be able to demonstrate a good understanding of real time systems and have a sound knowledge of at least one minicomputer or microprocessor.

A member of the Computing Services Association. Please write to or telephone Mr J. Jarvis giving details of experience.

EXCELLENT PROSPECTS AND UNUSUAL JOB

For person used to data input, or good typist who feels capable of better things. Will learn how to run our PDP 11 computer and systems, while initially helping with data input, and eventually take full control of operating procedures. Changes in hardware, programme and systems design. Experience is not essential but intelligence is. Good salary, fun office, Kensington.

Tel. Miss Bailey - 01-837 6603

BRIGHTON POLYTECHNIC

DEPARTMENT OF COMPUTING AND CYBERNETICS

SENIOR LECTURER/LECTURER II in COMPUTING

Research or recent industrial experience and interest in programming languages is required.

Salary: Senior Lecturer £8023-£8900, Lecturer II £3744-£5088.

Application forms and further details from the Personnel Office, Brighton Polytechnic, Mintercomb, Brighton BN2 4QJ Tel. (0273) 893885 Ext. 2837. Closing date 5th June, 1978.

QUEEN'S MEDICAL CENTRE

PROGRAMMER ANALYST

Required to develop a system for the follow-up and management of patients in the Diabetes Clinic. The person appointed will be attached to the Nottingham University Computer Project and will work closely with members of the Diabetes Clinic and the University Department of Community Health.

He or she must have the ability to carry through a project independently and to work with a multi-disciplinary team to translate their needs into workable systems. Experience in the medical field would be an advantage. Three years' experience in Cobol and in the design of information systems, and knowledge of ICL 2903 or 1900 Series is desirable.

Financial Computing with International Applications

Grindlays Bank Group is a British-based international bank employing 13,000 people in 35 countries. EDP has long been critical to our efficient operation and we are currently extending the UK and international applications of our IBM 370 and PDP 11/34-based configurations. We need these men and women:

Two Project Leaders

c. £7000
Both must have a background in a financial environment and at least two years' relevant experience including some project responsibility. Analytical ability and leadership are essential personal characteristics - and the ambition to realise the very substantial career potential of the job. Although London-based, there will be the opportunity for overseas assignments. Excellent remuneration package includes a salary of around £7K, mortgage subsidy and non-contributory pension scheme.

Systems Programmer

c. £5500
Preferably, candidates should be Systems Programmers at present, but we would be glad to hear from experienced assembler programmers using DOS/VS and CICS. Salary around £5.5K with mortgage subsidy and non-contributory pension scheme. Both appointments offer the chance to join a dynamic team developing and running sophisticated financial management systems. Career potential is substantial both within the DP areas and the international organisation as a whole. Please address your application, including career resume, to:

Grindlays Bank Limited

R. J. E. Barker, Group Appointments Manager, Grindlays Bank Limited, 36 Fenchurch Street, London EC3.

datascene

CONTRACTS TOP RATES + BONUS

IMS PROGRAMMERS
IMS ANALYSTS
IMS SYSTEMS/PROGS ALL AREAS

370 SYSTEMS/PROGS, MOS-HOLLAND
370 COBOL PROGRAMMERS-HOLLAND

SYSTEMS/SOFTWARE, CICS, DOS/VS
-WEST LONDON

B.1700 COBOL ANALYST/
PROGRAMMERS
-WEST LONDON

PLUS MANY MORE
IMMEDIATE STARTS, CALL
BOB EDWARDS
TODAY

Datascene Recruitment Limited
Sceptre House
169-173 Regent Street
London W1R 7FB

01-439 1856
24 hour answer phone

SOFTWARE PROGRAMMER up to £6100

LONDON W1

Do your career objectives include a desire to get experience on:

- ICL 2980 software - VME/S operating system, MAC and Transaction Processing
- Database systems, particularly IDMS?

If so, you could well be interested in joining our clients' software support team at their West End installation.

This opportunity will interest programmers with several years' experience, including software support on ANY MAINFRAME and knowledge of operating systems/special purpose software. Appropriate training will be provided for programmers without 2000 experience. Career prospects are good in a busy installation with an extensive schedule of development work.

Please ring us for a confidential exploratory discussion, quoting ref. 800. Alternatively, leave a message on our answering machine after hours or write briefly.

EDP Systems
52-53 Margaret Street
London W1N 7FF
Tel: 01-637 5796

F. W. WOOLWORTH AND CO. LTD.
Computer Operations
Team Leader
SWINDON, WILTS.

We require a person with a minimum of 3 years' operating experience on I.C.L. equipment and with a good sound knowledge of the I.C.L. system. The successful candidate will be responsible for the day-to-day operation of the computer department. The hardware to be used is based on I.C.L. 1803A (1824) and 1803 (1840) supported by EDS 90 and magnetic tape backing store. Operating on a 3 shift basis. The successful applicant's responsibilities will include controlling the activities of a team of operators self performing either online or off-line functions as required.

Please write to: Recruitment Team and Job description to: Mr. C. Rogers, Personnel Manager, F. W. Woolworth and Co. Ltd., Paradise Road, Dorset Industrial Estate, Swindon, Wiltshire, SN1 3SD. Telephone: Swindon 30131.

National Coal Board Mining Research and Development Establishment

This year the Establishment is undertaking additional recruitment to strengthen the effort in key areas of work relating to mine productivity and safety. A major part of the Establishment's work is devoted to increasing machine and system reliability.

There is a vacancy for:

COMPUTER SCIENTIST

In the Rotary Testing Branch. A minicomputer central control system will shortly be installed in the Rotary Testing Laboratory to monitor and control the capacity and control testing cycles and the selection of significant output data.

Applicants should be graduates in a computer-related subject with practical experience of minicomputer applications. The successful applicant will be wholly responsible for the commissioning and introduction of the system, for the development of the appropriate software, for carrying out the appropriate interfaces and for securing the maximum development of the installation in accordance with the engineering needs of the Branch.

The starting salary will be in the range £5,000 to £6,400 depending on qualifications and experience. Excellent benefits include nearly six weeks annual holiday.

Please apply to the Staff and Administration Manager, quoting reference no. 733.

National Coal Board,
Mining Research and Development Establishment,
Ashby Road, Stanhope Driety, DURTON ON TRENT, Staffs. DE15 0QD.

NCB MINING RESEARCH AND DEVELOPMENT ESTABLISHMENT

Computer Challenge

Analysts, Planners, Programmers,
Analyst/Programmers,
Data Control Supervisors.

Top ranking salaries + Tax-Free gratuity

If you have a good computer background with experience preferably within an IBM environment using PL/I - we'd like to tell you about the Technical and Commercial Systems we're developing in Zambia with IBM 370/158 Computers. The products there... the life for you and your family... the wonderful climate... and all the other things like low-cost accommodation, children's schooling, holidays and additional benefits.

For further details send us your name and address, quoting reference CW746, to:

The Manager, Zambia Appointments
Division, Zimco House, 129-130 Finsbury
Pavement, London EC2A 1NA.

**RCM
NCCM**

CIC CREDIT INDUSTRIEL ET COMMERCIAL
74 LONDON WALL, LONDON EC2M 5NE

In view of the forthcoming computerisation of the Bank's systems, applications are invited for the two appointments as follows:

SENIOR PROGRAMMER
(to commence July 1978)

SENIOR OPERATOR
(to commence August 1978)

Candidates for the post of programmer should be of A level standard of education and have had ideally around five years' previous experience of programming in COBOL.

Candidates for both posts must have some knowledge of minicomputers in general and of the ICL 2903 range in particular. They would ideally be aged 23-29. Some knowledge of international banking practice and of the French language would be an added advantage.

Salaries will be commensurate with the high standards and qualifications expected from suitable applicants, who should send brief details of their professional background, together with an indication of present and expected salary, in writing to:

Mr. S. A. JOYCE, Staff Manager, at the above address.

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

PROJECT LEADER (Senior Analyst)

BERKSHIRE

To £7000

A senior vacancy has arisen within this busy engineering company to lead and co-ordinate systems and programming staff working with real-time and database applications. Several projects are scheduled for implementation and at the present time our client is particularly interested in applicants with experience of accounting systems.

Applicants should have a minimum of three years in commercial data processing and will be keen to gain project control experience including supervisory and technical involvement with the company's IBM mainframe. Experience of databases, in particular IMS, would be an advantage.

The company, situated 25 miles from London, offers a starting salary of £7000. Relocation assistance, five weeks' holiday and excellent career prospects make this an excellent opportunity for an experienced Analyst or Analyst/Programmer to gain experience of real-time transaction processing systems.

24-hr. answering service
Please telephone for a confidential
discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 0981

Kreativität und Kontaktfreudigkeit erwünscht
Versicherungswirtschaft
Wir bieten den kompletten Rechenzentrums-Service zentral in Frankfurt für alle europäischen Zweige einer weltweit aktiven Versicherungsgruppe. Da die Nachfrage nach unseren Dienstleistungen beständig wächst, haben wir unsere Hardware jetzt auf eine /370-138 mit 512 KB (unter DOS/VS Rel. 34) ausgebaut. Aufgrund unserer Expansion wird ein

ANALYST/ PROGRAMMIERER

— mit guten Englisch-Kenntnissen —

mit der Fähigkeit, Projektleiter zu werden, gesucht. Die Aufgabe besteht in Systemanalyse in allen Versicherungsbereichen für Neugründung, Änderung und Übernahme fertiger Abläufe für weitere Länder Europas, aber auch teilweise Programmierung (ANS/COBOL) dafür.

Sie haben sich schon einige Jahre in Systemanalyse und Programmierung im kommerziellen Bereich bewährt, sprechen gut Englisch und kennen sich vielleicht sogar schon etwas im Versicherungswesen aus. Sie erwarten gute Entwicklungsmöglichkeiten in einem kleinen Kreis junger und engagierter Kollegen, ein sicheres und atemlos wachsendes Aufgabengebiet und selbstverständlich ein sehr gutes Gehalt.

Wenn Sie sich angesprochen fühlen, senden Sie bitte Ihre ausgefüllten Unterlagen an die COMPUTER SERVICES EUROPA GMBH, 21 Westendstrasse, 6000 Frankfurt/M., West-Germany. Tel.: 0611/74 04 04. Ihre Bewerbung wird von uns absolut vertraulich behandelt.

PERMANENT ESSEX

System Engineers
Analysts
Programmers

£NEG

Our client is heavily committed to developing communications systems involving various mini computers in network linkages or as stand alone devices. This is an ideal opportunity for 'go-ahead' professionals who want to acquire the right experience today, for the systems of tomorrow.

Ref: 1CWM18

to £61K

Systems Analysts

If you have a good commercial background in Analysts and like working in a dynamic atmosphere, within a Real-Time environment, then our Client would be very interested in talking to you about current development plans and future prospects. With good transport connections, our Client is ideally located for Analysts who want to trim travel time and cost.

Ref: 3CWM18

to £51K

Programmers

ICL Cobol is all you need to secure a good job with a progressive company in West Essex. Numerous benefits are offered. With pleasant offices and colleagues who are easy to work with, these positions are a must for any ICL Programmer living locally.

Ref: 4CWM18

to £51K

Analyst Programmers

An IBM Cobol and/or Assembler background is required by our Client in North Essex in order that they may be assisted in major On-line, Real-Time developments now getting underway. Numerous large company benefits are offered including flexitime, generous holiday entitlements and paid overtime. Get in touch now for an immediate assessment of your chances.

Ref: 5CWM18

to £61K

Systems Analysts

Programmers

Standards Officer

For these and many more opportunities, please contact John McLean now on:

BRENTWOOD (0277) 212021

Alternatively, send your C.V. to LINSOTT COMPUTER SYSTEMS LTD., P.O. BOX 74, BRENTWOOD, ESSEX CM15 0BZ.

LINSOTT
Computer Systems Limited

SYSTEMS ANALYSTS AND PROGRAMMERS

An I.C.L. 2960 was installed in January at Thorn Data Processing, Telford.

The site operates as a Bureau providing Batch and On-line systems through a communications and terminal network to customers in various parts of the country.

We require:

SYSTEMS ANALYSTS c £5000

Due to expansion and internal promotion, a number of vacancies exist at various levels. Analysts work within small teams developing a wide range of systems for user companies. The ability to communicate at all levels is considered as important as a good business system and technical background.

COBOL PROGRAMMERS c £4000

Programmers with at least six months' experience, interested in both 2960 development and conversion programming. Any hard-core background considered.

Telford is situated in rural Shropshire within easy reach of the beautiful Severn Valley. Low cost housing is available for rent or purchase.

For a confidential career discussion telephone the Recruitment Officer, TELFORD (0952) 583044 or write to:

Thorn Data Processing
Heldene
Helesfield 10,
Telford, Salop

THORN

SHROPSHIRE

WANTED

TRAINEE
SALES POSITION

For presentable, amiable young man aged 25 with professional and sales experience. Must have a good knowledge of computers and be able to sell computer products. Free time on block to effect training/assessments.

Box 1088
Computer Weekly

DEPARTMENT OF CLINICAL CHEMISTRY WOLFSBON RESEARCH LABORATORIES QUEEN ELIZABETH MEDICAL CENTRE, BIRMINGHAM SCIENTIFIC PROGRAMMER

A Scientific Programmer is required to join a small team of computer scientists responsible for routine and research computing within the laboratory. Hardware, software and systems are used. The successful candidate will be responsible for the design, development and testing of computer programs. A level one of the Computer Science degree programme will be considered. Some experience of Fortran programming and interest in operating systems and file management is desirable. Starting salary for graduates will be £2148 per annum to a maximum of £3837 per annum. A local studentship of £2624 rising to £2844.

Application forms and further information available from the Personnel Officer, Queen Elizabeth Hospital, Edgbaston, Birmingham B15 2TH. Tel: 021 472 1311. The closing date for applications is 22nd May.

CONTRACTS U.K. & OVERSEAS

LONDON

Systems Analyst with TP and/or DB experience
IBM - Cobol - OS DL1 and/or IMS
IBM - PL1 - DOS or OS
H66 - Cobol - IDS
ICL - Plan Driver

SUSSEX and ESSEX

Mini Assembler - Real Time operating systems

PARIS

IBM Assembler or Cobol (French speaking)
Any Mini Assembler (French speaking)
Cobol Compiler - Report Writer

IRAN

Univac 1100 - Exec 8 - IDMS

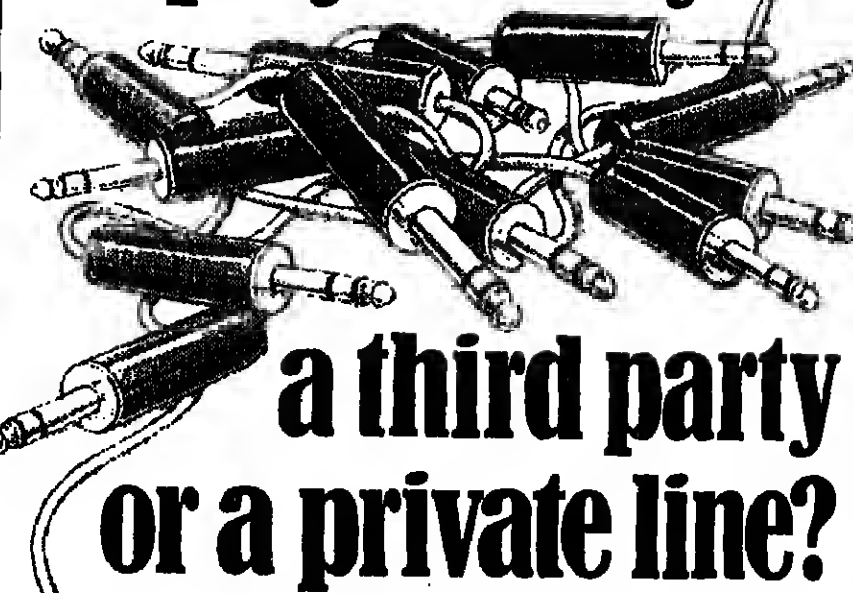
BELGIUM

DG Nova Cobol

BRENTWOOD (0277) 212021

For these overseas assignments, please contact John McLean

Between a potential employer and you-



a third party or a private line?

Now here's an alternative to spending your precious time on speculative interviews.

Just complete the coupon below and we'll send you a confidential application form. Think of it as a conventional interview and write down all the relevant details about yourself with the names of those companies you don't wish to join. Leave the rest to us.

We'll compare your details to the needs of our clients - over 3000 major companies including some of the top names in commerce and industry. Each time the two match up, you'll be shortlisted for an important job and our client will contact you direct. We can help you bypass the middle-man and get straight to the decision-maker.

We'll recommend you for some of the best jobs around which are seldom advertised. We'll introduce you to career development opportunities which you may never have considered.

And we'll help you realise your true value and potential on the current job market. Thinking about it do you really have a choice?

Please send me more information and a confidential application form.

Our clients are keen to meet men and women, aged 20-40 years with potential earnings of between

£4,000 and £7,000 p.a.

I'd like to see how Lansdowne can help further my career

Name: _____

Address: _____

THE POLYTECHNIC WOLVERHAMPTON
Department of Computing and Mathematical Sciences
LECTURER II/SENIOR LECTURER IN COMPUTING
Applicants should have a minimum of 5 years' experience in computing and an interest in systems design, software engineering or hardware design.
Salary Scale: Lecturer II £3144-£5523 (1981-1986)
Senior Lecturer £5823-£6447 (1981-1986)
Further details and application forms from: The Recruitment Office, The Polytechnic, Wulfruna Street, Wolverhampton.

UNIVERSITY OF SALFORD COMPUTING LABORATORY
Programmer
In the Operating Systems group of the Computing Laboratory to provide systems support and development for the University. Computing services on the PRIME 400/300 and ICL 1904S configurations. Applicants should have a good knowledge of FORTRAN and any assembly language experience would be an advantage.
Salary: £3,188-£4,801 USS
Supernumerary
Further particulars and application forms may be obtained from the Registrar, University of Salford, M6 4WT, to whom completed applications should be returned by 1 June 1978, quoting reference CL/51/CW.

UNIVERSITY OF EXETER FACULTY OF SOCIAL STUDIES
PROGRAMMER III
The Data Processing Unit in the Faculty of Social Studies requires a Programmer III to join a team of four programmers. The Unit has an ICL 472 computer. The work is a mixture of a technical nature in the creation and analysis of data bases and packages will be given to applicants with experience of programming at a high level language and the use of statistical packages. Applicants must have a university degree in a relevant subject but previous computing experience is not necessary as training will be given.
Salary according to qualifications and experience will be within the range £3085-£3500 p.a.
Applications, stating the names of two referees, should be sent to: Mrs. Gurney-Watson, Administrative Assistant, Department of Social Studies, University of Exeter, EX4 4JL by 8 June 1978. Please quote reference No. (481).

Recruitment Consultants
Calling Programmers Contract & Permanent
TEL 0565 4925 TODAY!

Manchester System Designers
£4779 to £7760
*Minimum 3 years working with real time software
*Substantial design experience
*Degree level qualifications
Project Programmers
£3723 to £5680
*Minimum 2 years programming experience
*Sound design experience
*Degree or HNC

Forman in European industry in industrial processes, control and digital data communications with over 10 years' experience. The ALCUS range of computers already in use. These openings result from our end large orders and plans for expansion. We are seeking staff who are capable of working on large and complex systems with a minimum of supervision and who are looking for technical challenge and advancement. The salary and benefits are a pleasant part of South Main's excellent reputation for advancement. Numerous relocation allowances are available for staff from outside the area.
Apply to Mr W L Robinson, Personnel Manager, Wythenshawe, Manchester M22 5LA quoting reference 27W/22/1/1V or telephone 081-428 3644 ext. 253 (revenue charged for further information).

Other opportunities Informal interviews
We also have vacancies for experienced sales engineers, project engineers, test engineers, maintenance engineers, draughtsmen and technical authors. If you would like an informal discussion on career prospects, senior members of our staff will be happy to meet you at the following times and places:
BOLTON Pack Horse Hotel, Nelson Square, Tuesday, 23rd May, 4.30 p.m. to 6.00 p.m.
ALDERLEY EGG The Edge Hotel, Alderley Edge, Wednesday, 24th May, 4.30 p.m. to 6.00 p.m.
MANCHESTER The Portland Hotel, Portland Street, Thursday, 25th May, 4.30 p.m. to 6.00 p.m.
These appointments are subject to change without notice.

FERRANTI Wythenshawe Division

PROGRAMMERS RENTOKIL LIMITED EAST GRINSTEAD
Further programmers of varying experience required for mixed batch on-line applications on ICL 1904S/300 and ICL 1900 configurations using COBOL, PLAN and CDE.
Conditions of employment are generous with fringe benefits which include: Contributory Pension Scheme, Profit Share, Free Staff Restaurant and Staff Discount. There is an active Sports and Social Club.
Situated on the Kent, Surrey and Sussex borders, East Grinstead offers pleasant and varied living and recreational facilities.
Salary up to £5,000 p.a.
Write or telephone: A. Appleby, Rentokil House, Gurnard Road, East Grinstead, West Sussex, RH10 1DY, Tel. E.G. (0342) 27171.

The ORGANIZATION OF THE PETROLEUM EXPORTING COUNTRIES
offers experienced Data Processing professionals most challenging job opportunities in the establishment of its computer services. The candidates will have academic qualifications in equivalent professional training. Fluent command of English, both written and spoken is essential. Experience in FORTRAN or COBOL programming is required.

DATA BASE ADMINISTRATOR
Profound knowledge in at least one of the major DBMS packages is necessary. Experience in the design, implementation and operation of data bases, in the enhancement of performance and in establishing the data dictionary is required.
SYSTEM PROGRAMMER
Detailed knowledge in at least one of the major operating systems for batch and time sharing environments, both local and remote is necessary. Applicants should have been responsible for implementing enhancements to operating systems, performance monitoring software packages, etc.
APPLICATION PROGRAMMER
Minimum of two years' experience in the development of D.P. applications is required, thorough practice in FORTRAN programming is advantageous; basic knowledge in operating systems, DBMS and file management systems is necessary.
The posts are permanent and provide for tax-free salary and social benefits.
Applicants are requested to send their detailed curriculum vitae including job history and salary progression as well as a recent photograph to: D.P.C. Administration Department, Queen's University, Belfast, Northern Ireland.

PROGRAMMER/ANALYST
Cardiff up to £4337*
Wales Gas serve approximately half a million customers and employs over 4000 staff throughout Wales. We currently require Programmer/Analysts preferably with 2 years' solid programming experience and knowledge of the following equipment to work on large data base oriented systems. The mainframe installation consists of Burroughs B3500 processor environment. A data communication network presently consists of over 80 VDUs, terminal processors, minicomputer printers and the permanently on-line disk storage is currently over 900 million bytes. Salary is in the range £3587-£4337 inclusive of phases 1 and 11 pay policy supplements. Other conditions of service are good and flexible working hours will be introduced shortly. Some assistance with relocation expenses may be available, where appropriate.
If you think you meet our requirements, please telephone or write to our Senior Personnel Officer for an application form, at Wales Gas, Snelling House, Bute Terrace, Cardiff. Telephone: Cardiff 33131.

EXPERIENCED COBOL PROGRAMMER
Up to £5500 p.a. + good fringe benefits
SURREY/SUSSEX BORDER
A vacancy has arisen through internal promotion for a programmer with four to five years' programming experience, mainly in COBOL. This person must be capable of linking on the job of lead programmer on a project, working closely with the analyst in drawing up specifications for real time and batch systems and controlling the work of the programming team. Experience of Burroughs computers is desirable. Excellent career prospects exist for the successful applicants and in addition to a competitive salary the Company offers fringe benefits including profit sharing, and excellent contributory pension scheme, staff recreational and sports and social facilities. Where appropriate, assistance will be given with relocation expenses. Applicants of either sex should write giving brief details of age, education and experience to:
Peter Thomas, Personnel Dept., ICI Plant Protection Division, Farnham, Surrey. ICI

COMMODORE SYSTEMS DIVISION
EXPERIENCED DIGITAL ENGINEER
to be responsible for the service of their 6502 based PET computer. The position is London-based, conditions are excellent and salary negotiable. Please contact Mr. Rowe on 01-388 5702. We will also require a TECHNICIAN to assist the above on the same equipment. Salary for this position is dependent on age and experience.

ABERDEEN ROBERT GORDON'S INSTITUTE OF TECHNOLOGY
SCHOOL OF ELECTRONIC AND ELECTRICAL ENGINEERING
RESEARCH ASSISTANT
A Research Assistant is required to join an SRC supported Research Project concerned with the application of digital stochastic computing techniques in on-line control and simulation. Applicants should be honours graduates in Mathematics and Statistics or Computer Science or Electrical Engineering. Three year fixed term contract. Salary range £3888, £3918, £4161 per annum. Application forms from Chief Administrative Officer, Robert Gordon's Institute of Technology, Schoolhill, Aberdeen AB9 1PR.

Abraxas Recruitment Division
ABRAXAS West End House, 11 Hills Place, Linton WIR 1AG **01-439 8891**
OPERATORS
OPERATIONS MANAGEMENT AND SUPPORT
OPERATIONS CONTROLLER ICL 1800/2900 £7,000
Situating in C. London. This 1900 user is looking for an extensive Operations background. A knowledge of large ICL systems and GEORGE III, together with a sound academic history. Excellent benefits include: Mortgage subsidy, Bonus + Intra meals.
PRODUCTION CONTROLLERS IBM 370 D05/V8 TO £4,800
Financial organisation, based in the CITY require an excellent D05/V8 background including written JCL and an in-depth knowledge of utilities. Versatility in an important qualification. Once again, excellent benefits include: Mortgage subsidy, LVS, Normal office hours.
OPERATIONS ANALYSTS IBM 370 D05/V8 £5,100
Applications invited from candidates with a strong IBM, particularly D05/V8, background. The position will entail operation of systems, implementation and support of new designs + review of new software and techniques. Benefits include Mortgage subsidy, S/T Loan scheme and subsidised restaurant.
TECHNICAL SUPPORT ICL 1900 £3,800-£4,500
Company in C. London require applicants with a GEORGE III background to join a software support programming team. Training will be given. Knowledge of GEORGE III Macros essential. Days only.
RING NOW FOR MORE DETAILS OF JOBS IN YOUR AREA!
Skilled Operations staff are IMMEDIATELY required for an ever-increasing number of vacancies covering IBM, ICL, UNIVAC, HONEYWELL, BURROUGHS, POP + MINIS. We welcome applications from enthusiastic JUNIORS/TRAINEEs with a sound academic background. If you have a minimum of 8 months' experience on any machine we will help you find a more rewarding position both in terms of job satisfaction and salary. Listed below are just some of the current vacancies. For these and many more contact JASMINE DAINES.

SHIFT SUPERVISOR	IBM OS/VS1	G. LONDON	GOOD JCL	£5,200
SENIOR OP.	IBM OS/VS1	C. LONDON	3 YRS. EXP.	£4,700
SENIOR OP.	IBM OS/VS1	W. LONDON	3 YRS. 2 SHIFT	£4,000
SENIOR OP.	ANY M/F	S. LONDON	2 YRS. +	£4,300
OPERATOR	IBM OS/VS1	C. LONDON	18 MTHS.	£4,100
OPERATORS	IBM OS/VS	CITY	1 YR. +	£3,800
OPERATOR	IBM OS/VS	CITY	18 MTHS.	£4,000
OPERATORS	ICL 1900 GH	N. LONDON	2 YRS. 2 SHIFT	£4,000
SENIOR OPS.	ICL 1900/2900	HANTS	2 YRS. +	£4,100
OPERATORS	ICL 1900 GH	S. HERTS.	18 MTHS.	£3,500

RING NOW FOR MORE DETAILS OF JOBS IN YOUR AREA!
Abraxas Computer Employment Ltd.

MYRIAD APPOINTMENTS LIMITED
Computer Personnel Consultants
BUSINESS CONSULTANTS
CITY & WEST END c £7500

We are seeking experienced Analysts and Programmers keen to progress their careers to business analysis and consultancy. The Company, a major US bureau, has over 60 mainframes in the States linked to both Europe and Japan; They market a sophisticated range of financial packages for use by senior financial and marketing management. To support the company's very successful marketing operation in London several Applications Consultants are required to support their current expansion.
Ideally you will be outgoing with at least five years' commercial experience. Awareness of business issues together with experience of financial applications would be of particular relevance. Successful applicants will receive extensive training on the company's products and will become well versed in their approach to business analysis.
24-hour answering service
Please telephone for a confidential discussion or write to:
30 Fleet Street, London EC4Y 1AA
01-353 0881

THE SALES BIT
Do not assume anything . . .
THOSE who have read the previous items in this series will recall the proposition that closing the sale is an ongoing process which starts from the initial contact with the client. Benefits and advantages are agreed, commitments and priorities are established throughout the selling process, so that asking for the order is not that should be necessary to secure the business.
In the context of this situation, I would like to draw your attention to the word "assumption".
It is most important that a positive stance is taken by the salesman throughout the entire sales negotiation. Nothing destroys the professional credibility of a salesman, and therefore his company, more than a vague, wishy-washy approach. The salesman who appears to be unsure or even negative about his product, his company and his enthusiasm for gaining the business has more often than not lost the sale long before the final decision is made.
I am not talking about lack of product knowledge. I am talking about the salesman's attitude towards the sales negotiation. How can the buyer be expected to have a positive attitude when the salesman has not? One useful stance which can eradicate any suggestion of lack of interest on the salesman's part is to adopt an attitude of "assuming the business". This is a kind of preliminary "closing" technique which, if used, must be handled with great sensitivity. It is not a blunt "When we get the business" which will certainly result in worse repercussions than the situation it is designed to overcome. It is more an attitude of low profile "togetherness".
"We both need to give this job absolute top priority once we get started."
"I know our systems people are looking forward to working with you."
"Do you think we should aim for the first parallel run with the client?"
Of course, all the business compelling for the job has to be done. It's just that their salesmen had not involved themselves in a detailed analysis of the client's requirements and had assumed that something as fundamental as a language processor, which was available from all potential suppliers, was not worth mentioning.
So please, do not assume anything in the sales situation. Do not assume that the client understands, accepts, refutes anything. Above all do not assume you have got the order until the first invoice has been paid.
TRADE

Disc system
A DISC system that can interface directly with the Digital Equipment PDP-11/70 and which can communicate directly with the 11/70 via the RS232C interface has been introduced by Diva Inc.
Called the DD70, the system includes an intelligent microprocessor based disc controller, the Computer V, and an interface that is used in place of the DEC RH70 Minibus controller.
Diva points out that the DD70 is software transparent to all DEC operating systems and eliminates the need for any software or hardware modification to the user's PDP-11/70. It supports RSTS, RSX11D, RSX11M, Mumps, Unix and DOS.
The controller can handle up to eight disc drives, each with a capacity of between 80 and 300 megabytes and the system interface drives full 32-bit words to be transferred directly into memory without CPU intervention. Data can be transferred at rates up to 1.2MB per second.
Diva also manufactures large capacity, high performance disc systems for Data General and Interdata minicomputers.
Divac Inc (GW), 607 Industrial Way, West, Erienvon, New York 14622, USA. Tel: (0101-201) 544 8800.
Silencer
A SILENCER cover for the Commodore 6400 printer has been introduced by the Power Equipment Company of Kingsbury Road, London NW9 8DU.
Puzzle answer
THE Hardware results (which must have been 0-0, 0-0 and 0-2) give the key to all the scores. Analysts: Hardware takes care of one 0-0. Software is the other. Further calculation brings forth Analysts Software as 1-1, which leaves 1-0 as the required. Analysts: Designers score.

P.D.P. MINI COMPUTERS BRISTOL
Due to continued growth both through new and existing contracts our clients Jenson Computer Systems, a software house specialising in the marketing and development of commercial "top line" systems for P.D.P. mini computers require the following:
Systems Support Analyst
To assist in the development and marketing of commercial software packages Jenson are particularly keen to recruit a Systems Support Analyst already having or with a specific interest in pre/post sales support.
Suitable applicants need not have had prior mini computing or V.H.C. experience although this of course would be an advantage.
However, specific requirements will include previous design experience of commercial systems, implementation of financial systems would be of particular interest.
Salary - £5,250 p.a. Experience.
Sanderson EXECUTIVE RECRUITMENT
TELEPHONE 0272 38802

Project Leader
Required at middle-management level. Jenson want to appoint an experienced Analyst whose essential qualities will include both the ability of man management with D.P. expertise to autonomously control commercial projects.
Although prior involvement within a mini computing environment would be desirable computer design and implementation programming experience would be of equal importance.
Salary - To £6,750
Programmers
A requirement exists for various levels of Programmer with specific emphasis on senior Programmer having previously had "on line" experience utilizing mini computers using BASIC or File. They would be able to command higher salaries.
Suitable consideration will be given to main frame or V.H.C. Programmer wishing to transfer to mini.
Salary - £4,500-£5,000
22, Parkside Victoria Road, Bristol, BRISTOL

Systems Engineering

The Sperry Univac International Division Customer Support Centre (ISCSC), is located at 141, Westbourne Terrace, London, W2 for the purpose of providing computer resources to Division Headquarters and International subsidiary users.

Top level expertise in software, hardware and operations support is provided with direct channels of communication to the development centres located in the United States.

ISCSC now has a requirement for a Systems Engineering Consultant who will be responsible for the computer facility subcontract selection and supervision, site planning, and financial planning.

The successful candidate will probably have 5-7 years experience with a computer manufacturer and presently be employed as a senior engineer consultant or service manager.

Sperry Univac, as a major manufacturer of computer equipment can offer excellent opportunities. Salaries and benefits are extremely attractive in keeping with UNIVAC's position as a market leader in the computer industry.

Please telephone 01-965 0511 (ext 3040 or 3043) or write with brief career details to Mrs Katherine Hartnell, Personnel Manager, Sperry Univac International Division Headquarters, Sperry Univac Centre, London, NW10 8LS.

SPERRY UNIVAC
DIVISION OF SPERRY RAND LIMITED



EITHER WAY IT'S A GOOD DEAL.

Three great places to work, and plenty of work to get your teeth into. At Westinghouse we are at the forefront of innovative technology in the use of computers for railway systems, mining, and process controls. Our order books are growing and we need ambitious (and we mean ambitious) software staff to work on a variety of projects involving mini and micro computers, real time process control and monitoring, CAD-linked support systems etc. We've got a wide range of machines: HP NOVA, DEC, and languages: CORAL 66, RTL 2, ASSEMBLER, FORTRAN etc.

We're currently looking for:

Project Leaders
Analyst/Programmers
Senior Systems Analysts
Systems Analysts

The jobs are based in Chippenham, Bracknell and Wokingham. You make the choice - either way it's a good deal.

If you're really good at problem solving and want to gain more experience in a company known worldwide for its innovations in modern systems then Westinghouse is the company for you.

Write to day to: RA Murley, Company Personnel Officer, Westinghouse Brake and Signal Co. Ltd., FREEPOST, Chippenham, Wilts.

WESTINGHOUSE
Brake and Signal Co Ltd Chippenham Wilts

Advanced Technology in Chippenham, Wokingham & Bracknell.

Programmers

Bristol from £3985-£4,930

Would you like to work:

* in a modern office at Badminton Down, Bristol

* on an ICL 1903T/2960 DME

* using GEORGE 3 and MOP * on new on-line systems

If you have either: one years experience of COBOL and/or a degree or equivalent qualification

Either phone Bristol 32281 Ext. 18 or write to the Personnel Manager, 15-25 Oakfield Grove, Clifton, Bristol BS8 2AS and ask for an application form AF/1. This should be completed quoting Vacancy Number 354/78/CW and returned by not later than 26 May 1978.

Central Electricity Generating Board
South Western Region
Oakfield Grove, Clifton
Bristol BS8 2AS

CONTRACT PROGRAMMER
COBOL/DOS/DLI
SOUTH ENGLAND
TOP RATES

X-Cellar Computer Services
47 Baker Street, WC2
01-362 1201

Programmers and Programmer/Analysts - there's a world of difference at ISL

A lot of the difference is centred around our international role. IBM Information Services Limited helps IBM's business run smoothly in over 20 countries, backed by one of the largest and most advanced DP installations in Europe.

We process a large part of the company's European order scheduling information and also provide online services and data banks on a worldwide basis by means of direct teleprocessing.

As one of our Programmers or Programmer/Analysts you'd be at the heart of this operation in contact with overseas IBM locations, helping design, develop, install and maintain international applications systems and on occasions travelling abroad to meet and help your colleagues on the spot.

We are updating and extending both our hardware and software capabilities and this continued expansion gives plenty of scope for diversifications and progression.

Right now, we're looking for determined men and women with 2-3 years' programming experience, a proven interest in applications, and

analytical minds. Experience of large systems and a knowledge of one high-level language would be very useful - but is not essential as both are covered in our training.

We offer generous relocation expenses to our new headquarters in this attractive part of the South Coast, which has outstanding recreational and social facilities.

Salaries are very competitive and IBM's employee benefits package is acknowledged to be one of the best in industry today.

Interested? Then write now with full details about yourself or, if you'd prefer, telephone for an application form to Jill Christison, Personnel Officer, IBM Information Services Ltd, PO Box 39, North Harbour, Portsmouth PO6 3AA (Tel: 07018 21044 Ext. 3624) quoting ref: CW/936971.

IBM
Information Services Limited

Senior Computer Operator

Develop with Courage

Courage, a division of the Imperial Group Limited is one of the largest brewing companies in the UK and encompasses breweries, distribution depots and public houses.

Our Data Processing Centre is in a new building in Western Avenue close to Park Royal and North Acton tube stations. Our operation is based on two ICL 1903T computers currently running under GEORGE 3S using MAXIMOP. We are currently looking for a Senior Operator.

You will work on a three shift system. The duties are varied and so offer interesting work in a very pleasant environment. We also provide full internal and external training to allow you to develop your technical skills.

The successful applicant will have at least 18 months experience on ICL 1900 series equipment.

In return we offer an attractive starting salary and the additional benefits of discount, pension and insurance arrangements and company products.

If you would like to contribute towards our further development and success please contact:

Barbara Wren,
Personnel Administration Manager,
Courage Ltd.,
Data Processing Department,
Mansfield House,
335 Western Avenue,
Acton W3, Tel: 01-992 5591.

COURAGE

Division Head/Computer Sales Division

KUWAIT

THE COMPANY:

Photo & Cine Equipment Co. Ltd., a member of a rapidly growing group of trading companies in Kuwait with a staff of 250.

Active in the fields of Optics, Photo, Electronics and Office Systems. For the last 8 years very successful in marketing high quality business machines.

To further specialise and expand Photo & Cine has recently established a Computer Division for marketing WANG Mini Computers, Word Processors, Microfilm Retrieval Systems and other specialised electronic equipment for commercial application.

THE DUTIES:

To help build up the new Computer Division outlining the following and in conjunction with the Group's professional management team:

- Sales activities
- Conduct market surveys
- Initiate publicity activities
- Arrange support services
- Organise training of sales and technical staff
- Supervise general administration
- Implement stock control and inventory management
- Comply with regulatory systems
- Implementing man power planning

THE RIGHT CANDIDATE:

The contract is for 3 years, renewable, with 35 and 45 who has at one time been a Systems Analyst and ideally built up a computer sales division from scratch.

He/she will have a good sense of business with a computer science background and preferably have some experience with WANG Mini Computers.

He/she holds a valid driving licence and has a good command of the English language. Some knowledge of Arabic would be an asset.

THE REMUNERATION PACKAGE:

- The contract is for 3 years, renewable, with
- Excellent tax free salary plus sales commission
- Free furnished air-conditioned accommodation
- Free water and electricity
- Free company car for official and private use
- Free state medical care
- Free air ticket from and back to home country with an unaccompanied baggage allowance
- 26 days' paid annual leave
- Free annual air ticket to home country
- 8 weeks' bonus at end of contract

Please submit your complete application, consisting of a systematic C.V., copy references and recent photo to our Branch Office in West Germany.

KIMCO
Marketing Co. Ltd.

HERZOGSTR.
9078 NEU-IZENBURG
WEST GERMANY

British-American Tobacco Company Limited
GROUP RESEARCH AND DEVELOPMENT CENTRE
Southampton

SCIENTIFIC ASSISTANT (Computing)

We require a research assistant to operate and develop scientific data systems associated with mass spectrometry and other laboratory instrumentation. Applicants should possess an H.N.O. qualification, or equivalent, in Chemistry/Physics or Computing/Mathematics with G.C.E. 'O' levels in Chemistry and Physics. Experience of FORTRAN programming, preferably in a scientific environment, is essential, and an interest in the application of computers to scientific instruments would be an advantage.

This is a permanent staff appointment and conditions of work are excellent. The Centre is situated on the outskirts of the City and car parking space is available. First-class restaurant facilities. Flexible working hours in operation. Sports and Social Club. Re-location assistance will be provided if appropriate.

We shall be pleased to hear from interested applicants (male or female) who should write for an application form to:

Personnel Department (Folio 105)
GROUP RESEARCH AND DEVELOPMENT CENTRE
British-American Tobacco Company Limited
Regent's Park Road, Millbrook, Southampton, SO9 1PE

BRITISH WOOL MARKETING BOARD
OAK MILLS
STATION ROAD
CLAYTON
BRADFORD
WEST YORKSHIRE
BD14 6JD

have the following vacancy

ANALYST PROGRAMMER up to £5,000

The British Wool Marketing Board, which buys from sheep farmers and sells to the trade virtually all the fleece wool produced in the United Kingdom, is replacing its present installation with a CTL 6050 using on-line data entry facilities.

Analyst Programmer, with at least 12 months' mainframe computer experience is required immediately for a vital role in the multi-disciplinary development team, working mainly in London initially and subsequently in Bradford. A wonderful opportunity for YOU to enhance your skills and experience.

Help with relocation expenses, and temporary accommodation will be provided. Excellent working conditions; life insurance and contributory pension scheme; subsidised meals.

Details of education and career history to: Tony Bennett, Administrative Officer or ring Bradford (0274) 852081 for an application form.

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

OPERATE NCR CENTURY

ESSEX/KENT BORDER

£3500-£4125

This position is an excellent opportunity for someone to pursue a career in computing.

The successful applicant, who will probably have been in operations for approximately one year, will join a small team operating dual Century computers, on a three shift basis, processing a range of batch and on-line systems. Previous Century experience, whilst advantageous, is not a necessity. The work load has increased considerably during the past year, and with further development work in progress the person appointed can look forward to healthy future prospects within this expanding installation.

The company is a well known retail organisation with one hundred and twenty outlets throughout the London area. It is backed by the resources of a major international consortium which has developed a strong commitment to data processing.

In addition to the commencing salary, which is supplemented by six monthly increments, a valuable range of fringe benefits is offered including a pension scheme, four weeks' holiday and subsidised canteen.

24-hr. answering service
Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 0981

City Treasurer's Department

COMPUTER PROGRAMMERS

(£2883-£4214 including supplements)

Applications are invited for two posts within the Department's Computer Section at the City Hall, Cardiff.

The installation consists of a 192K ICL 1904K processor with extensive communications facilities. Planning is currently taking place for the introduction of an ICL 2900 computer in the near future.

Preference will be given to applicants with experience of COBOL. The work will be within teams converting and writing COBOL programs to 2900 forward compatibility standards.

The commencing salary within the above range will be dependent upon qualifications and experience. A 37-hour 5-day week is worked, and the posts are supernumerary and covered by Local Government conditions of service.

APPLICATION FORMS ARE AVAILABLE FROM THE CITY PERSONNEL OFFICER, CITY HALL, CARDIFF CF1 3NO (TEL 31033 and 430) AND MUST BE RETURNED NO LATER THAN 31st MAY, 1978.

CITY OF CARDIFF

TRAINEE PROGRAMMER

Salary £4250 per annum plus other benefits

Must have experience in Systems 3 operation and data entry on IBM 3741 and willing to undertake programming training on Model 150 in multi-national environment.

Please telephone Miss Miller on 01-437 9878 for interview appointment.

Caltex (U.K.) Limited
30 Old Burlington Street
London W1X 2AR



PROGRAMMER

LONDON, WC1

To £5,900

At least 3 years' FORTRAN and/or COBOL experience with OASIS as required for this large mainframe installation. Knowledge of one or more of the following is desirable: ADABAS, BOMS, IBS, JORAL, IDS, OMS, IPL, RIMS and S2K.

PROGRAMMER/ANALYST

LONDON, SE

To £5,900

An RPO II programmer in their early 20s looking for an opening into analysis would be ideal for this position in a manufacturing company. IBM system 3 model 15 with delivery of a new machine imminent.

PROGRAMMERS

LONDON, SC1

MBO

With 2 or more years' experience for a telecommunications. If you have an IBM background with COBOL, SAS, PL/I or ICL 2900/10/80 with DEC PDP 11, MACRO 11, ASSEMBLER or BASIC please apply. Programmers with any microcomputer experience would also be of interest.

PLEASE TELEPHONE FOR AN APPLICATION FORM

AMES PERSONNEL
TELEPHONE: 01-767 0611

BOLTON INSTITUTE OF TECHNOLOGY ELECTRICAL ENGINEERING DEPARTMENT RESEARCH ASSISTANT

Applications are invited from Graduates in Electrical Engineering for a Research Assistant to work for a Higher Degree in one of the following areas:

1. Microprocessor Applications
2. Medical Electronics
3. Digital Control

The Department is equipped with several Motorola and Intel Microprocessors in addition to a comprehensive disk based real-time PDP-8 system. A PDP-11 graphics system is also available. Course assemblies have been written for both 8080 and 8800 to run on the PDP-8.

The successful candidate will be expected to register for a Higher Degree and to undertake some duties of a teaching nature. Salary AP II - £2,841-£3,165 (plus 5% Phase 2 supplement). Application forms should be returned by 31st May, 1978 are obtainable from the Principal, Bolton Institute of Technology, Deane Road, Bolton BL3 5AB.

Communicate with Racal

Racal-Milgo Limited as a wholly owned subsidiary of the Racal Electronics Group of Companies and specialising as leader in the field of Data Communications Equipment, has a requirement for a Regional Sales Manager to be based in the North.

The person (Male/Female) will be expected to control areas of the Company's business in an area north of the Midlands and will be directly responsible to the UK Sales Manager for the continuing business success in this area.

The successful person will probably possess a Degree or equivalent qualification and have experience in a technical sales environment. Experience in data processing or a computer related field is highly desirable. Proven field sales managerial experience is essential.

A basic salary commensurate with the responsibility of the position will be paid. A company car will be provided and the person will participate in a commission scheme. An attractive contributory pension scheme is provided and assistance with relocation will be considered where appropriate.

Write with details of age, experience and current earnings to:

D. J. Kichenald,
Personnel Officer,
Racal-Milgo Ltd,
Prospect House,
Thorn Street, Reading, Berks.

Regional
Sales Manager
(North)
Data
Communications

RACAL